



Kentucky Naturalist News

Official Newsletter of the Kentucky Society of Natural History

Volume 73 Number 1 Winter 2014-15

FROM THE PRESIDENT

This October, Kentucky lost a true naturalist and many of us lost a true friend – Dr. Tom Barnes. The list of Tom's accomplishments would fill several pages. He was an author, professor, teacher, mentor, naturalist, environmentalist, conservationist, photographer, husband, father, and a whole slew of other roles and responsibilities. What most of us will remember Tom for is his friendship. Tom was foremost and always a friend. Within a few minutes of meeting this intelligent man you felt as relaxed as if you had known him for some time. He could teach in such a way that you didn't feel as if he were lecturing you. It was more of a conversation/clarification. Tom was modest – he made you feel at home. He led by example and a positive attitude. Even up to the last he was optimistic and upbeat.

Tom, Susan Wilson, and I spent many a day/night in the woods searching for elusive wildflowers. Most of the time we would hit pay dirt but even when our seek-and-find missions failed to uncover the sought after rare plant, Tom was always cheerful and so glad to just experience the varied and wonderful Kentucky habitats. We shared so many wonderful trips – a journal should have been kept about our adventures. We sweated, froze, got wet, got filthy dirty, got lost, and almost snake bit.

I remember one hot day in Ballard County having to pull Tom out of a "man-eating" mud quagmire that he had led us into to photograph mud plantain. Tom suddenly slipped up to his waist in mud and he thought for sure he was going under! His camera, however, stayed safe – being held well above his head.

Tom gave more than he received especially as a mentor and/or teacher. No matter how many times a question was posed to him, he would answer it in

a way that inspired you to further research the topic. Without his tutoring in photography, Susan and I would have never been able to do the photos for the Pat Haragan book on the Olmsted Parks in Louisville.

A lot of us owe Tom a lot of thanks. He was tireless in his thirst to learn, to share, and to see more of Kentucky. A transplant to Kentucky from South Dakota, Tom knew more about Kentucky's natural history and value than most native Kentuckians. His articles, books, and his wonderful photos are a testament to his drive to share Kentucky's natural world with everyone. I could go on and on about this Kentucky colonel and Kentucky Naturalist of the Year for KSNH who was a multi-talented and multi-faceted man. I am proud to have been so privileged to share so many outings and learn so much from Tom.

There are two quotes that come to mind when I think of Tom Barnes. One is a quote from Robert E. Lee when, on hearing of the death of his cavalry leader Jeb Stuart at Yellow Tavern, remarked, "I can scarcely think of him without weeping". The other quote comes from the movie "Dances With Wolves". John Dunbar, played by Kevin Costner, calls out to Kicking Bird "I will not forget you". Both of these quotes I am sure reflect how many of us feel about Tom's passing.

Keep Tom and his family in your prayers, especially his wife, Jamie, and his children, Jeremiah and Michaela. He loved them dearly. I give Tom about a year in heaven and I will not be surprised if a book entitled [The Wildflowers of Heaven](#) miraculously appears at local bookstores.

Chris Bidwell



WWW.KSNH.ORG

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Berl Meyer (kygeology@gmail.com)

Pat Molloy

Affiliated Chapters

Arches of the Cumberland (Slade, Ky)

Meets informally, call President Dell Sasser for Details, 606-666-7521 ext. 73559, or 606-233-8938. Email: del.sasser@kttcs.edu

Falls of the Ohio (Louisville, Ky)

Meets every third Thursday of each month except Jan, Jul, Aug & Dec at the Louisville Nature Center, 3745 Illinois Ave. Chapter President: Wayne Kimbel
Email: waykim1@twc.com



In Memorium

Dr. Thomas G Barnes

KSNH Welcomes New Members

Danny and Jamie Mullane

KSNH SPRING CONFERENCE at Natural Bridge

April 24, 25, 26, 2015

All meals are on your own. All trips leave from the Lodge unless otherwise posted. Note departure times and driving distances. Carpool. Take cameras, water, binoculars, tick spray – **DO NOT LEAVE VALUABLES IN CARS.**

Field Trip Ratings:

EASY: hiking short distances on trails with little slope.

MODERATE: Generally easy with a comfortable pace. Participants must be able to negotiate occasional steep slope and/or rough trail.

STRENUOUS: More endurance required to negotiate longer stretches of steep slopes and rough trail.

Be careful on all of the field trips and watch your step. Also, watch above your head for dead trees that could fall. Many field trips may occur in locations where high cliffs are present and participants should not wander off trails or walk near edges of cliffs.

Friday, Apr. 24 **EARLY BIRD TRIPS**

12:30– 2:30 pm KY Reptile Zoo

KRZ is a non-profit organization featuring a zoo exhibit, venom extractions, and educational outreach program. It has one of the finest venomous snake collections in the state including the infamous spitting cobras, mambas, rattlesnakes, vipers, and adders. Also on display from around the globe are anacondas, alligators, pythons, and turtles.

Leader – Chris Bidwell

Rated : EASY

Venom Extraction at 1 pm!

Cost : \$6.00

Friday, Apr. 24 Scenic drive and stop at Broke Leg Falls, noted for its mosses and

2:30- 5:30 pm liverworts. We will proceed to the quaint, pure Americana “Swamp Valley Museum”.

Swamp Valley Museum – In Menifee County – the sign says it’s “half way between Possum Hollow and Lizzard Ridge” – you will find Swamp Valley, where the staff will be happy to show visitors around this home-spun “museum and novelty shop”. The exhibits, housed in several buildings on the property, represent more than a century’s worth of “Kentucky Life”, from birth (midwives’ equipment) to death (a coffin-making shop), 19th Century buggy, antique books and newspapers, and “The John Poplin’s Civil War Home”. The museum is located 8 miles east of Frenchburg on Highway 460.

Leader: Chris Bidwell

Rated: EASY

Drive time: 40 min

Cost: \$2.00

Friday, Apr. 24 Easy scenic stroll along the Lakeside Trail and visit to Henson’s

3:30-5:30 pm Arch/Cave entrance.

Leader: Brian Gasdorf, Park Naturalist or Staff at NBSRP

Total distance: 1 mile

Rated: EASY

DINNER ON YOUR OWN

Friday, Apr. 24 Registration at the Lodge 6:30 pm – Pat Meyer

7:00 pm Evening Program – Chris Bidwell, president KSNH

Welcome and Introductions – explanations of field trips/events

Speaker: William H. Patrick – “Arches of Red River Gorge”

Saturday, Apr. 25

7:15-8am Group Birding – Meet front of the Lodge

Sat., Apr 25 Hike to Horseshoe Arch

9:00-noon An unusual arch as most of the limestone/sandstone is still present under the arch.

Off Highway 715 – off Sheltoewe Trace near suspension/swinging bridge

Leader: William H Patrick

Rated: MODERATE

Hiking distance: 0.5 miles

Sat, Apr. 25 Hike to Natural Bridge via Original Trail with return via Balanced

9:00-noon Rock Trail. Original Trail is the shortest and easiest trail to the Natural Bridge. Scenic vistas and flowers.

Leader: Wilson Francis

Rated: MODERATE

Hiking distance: approximately 1.25 miles round trip

Sat, Apr. 25 Scenic Driving Tour through Red River Gorge. Beautiful scenery

9am – 4 pm with wildflowers and geological sights Stops at Gladie Cultural and Environmental Learning Center with many interesting and informative exhibits designed to interpret the cultural heritage and unique resources of the Red River Gorge. The center provides a place to rest, ask questions, and learn about the Red River gorge. The public may purchase maps, passes, books, and souvenirs.

Leader: Berl Meyer

Rated: EASY

Lunch stop during tour

Sat, Apr. 25 Hike to Pilot Knob State Nature Preserve

1 pm – 4:30pm Considered to be the place where Daniel Boone first stood and looked out over the Bluegrass Region of KY, Pilot Knob is one of the tallest knobs in the Cumberland Plateau at 730 feet. Located 2.7 miles north of Clay City on Highway 15. Turn **RIGHT** on Brush Creek Road and go 1.5 miles to dead end at gravel parking area. Frequent hike stops to rest and discuss points of interest.

Leader: Joyce Bender – Commission to KY State Nature Preserve **Drive Time:** 30 min

Rated: STRENUOUS – due to 700 foot elevation change

Hiking distance: 2.5 miles

NOTE DEPARTURE TIME

Sat, Apr. 25 Hike to Rock Bridge Loop Trail and Creation Falls

1 – 4:30 pm A natural waterfall arch that crosses a stream. Lots of flowers.

Meet at parking Lot at Rock Bridge Trail at 1:30 pm. Take Highway 15 South to Route 715 to Rock Bridge Road which dead ends at Trailhead

Leader: Eric Dodd – US Forest Service

Rated: MODERATE

Hiking distance: 1.5 miles round trip

NOTE DEPARTURE TIME

Sat, Apr 25 Hike on Rock Garden Trail

1:30 – 4:30 pm Noted for its wildflowers, scenery, birding.

Leader: Brian Gasdorf or Staff at NBSRP

Rated: EASY

Hiking Distance: approximately 2 miles round trip

DINNER ON YOUR OWN

Sat, Apr 25 Meeting

7 pm Welcome – Chris Bidwell, president KSNH

Recap Trips and Thanks

Door Prizes – Cindy Payne

Sunday trip to Whittleton Arch at 9 am discussed

Board Meeting – all are welcome

Sun, Apr 26 Hiking to Whittleton Branch Trail/Arch

9 -11am Beautiful walk, lots of wildflowers. Meanders over scenic Whittleton Creek.

Leader: Brian Gasdorf or Staff at NBSRP

Rated: EASY

Hiking Distance: approximately 2 miles round trip

Thanks for a great Conference and Support KSNH!

Have a Safe Trip Home

Our Fall Conference is at Mammoth Cave on October 16, 17, 18, 2015

Information, agenda, registration will be out shortly after our Spring Conference

ON YOUR OWN ACTIVITIES

KY Reptile Zoo

Swamp Valley Museum

Red River Gorge Scenic Drive

Gladie Educational Center

Clifty Wilderness Area

Torrent Falls climbing Adventure

Sky Lift to Natural Bridge

Wild Things of KY

Hiking trails at Natural Bridge SRP and Red River Gorge

KSNH 2014 Spring Conference at Natural Bridge SRP Trip Leaders and Speakers

Joyce Bender – Commission to KY Natural Preserves and Natural Areas Branch Manager – KY Nature Preserves Commission – past recipient of the KSNH Naturalist of the Year award

Chris Bidwell – president KSNH – amateur naturalist and photographer – past president Falls of the Ohio chapter (2005-2013) – owl prowler – co-photographer for the book The Olmsted Parks of Louisville: A Botanical Field Guide (2014) – ER/Flight Nurse (1974 – 2014)

Eric Dodd – interpreter for the Cumberland Ranger District of the Daniel Boone National Forest in the Red River Gorge Geological Area. My duties include planning and presenting events at our visitor center, campground programs, and programs for various schools and groups. I also design various forms of interpretive media such as exhibits, signs, and bulletin boards. I have worked on the Daniel Boone National Forest for approximately 3 years. Prior to that I worked on the Allegheny National Forest in PA, Yellowstone National Park in WY, and Jewel Cave National Monument in SD. I am originally from PA and have a B.S. in Park and Resource Management from Slippery Rock University.

Brian Gasdorf – naturalist/interpreter at Natural Bridge SRP

Wilson Francis – Biology teacher at Hazard Community college since 2005 – 1978-2005 worked at Natural Bridge SRP, first as Park Naturalist and later as Park Superintendent – native Kentuckian – UK grad and married to Jennifer Francis, who keeps him in line – past recipient of the KSNH Naturalist of the Year – past president KSNH – co-author of Wildflowers and Ferns of KY

Cindy Payne – KSNH member, Falls of the Ohio chapter treasurer – door prize coordinator

Berl Meyer – vice president KSNH – long time member and board member KSNH – has led numerous geology and nature hikes, teacher naturalist, Navy veteran, Civil War buff – brings a lot of knowledge and history of natural world to KSNH

Pat Meyer – state KSNH treasurer – conference registration – past president of state KSNH – naturalist, birder, teacher, excellent resource person – board member

William H. Patrick – Red River Gorge Arch expert – publisher, lecturer, photographer, and arch discoverer- has made 4 excellent volumes/CD's on the Red River Gorge Arches – website www.redrivergorgearches.com

From: Donna Alexander

Date: 11/19/2014 1:52 PM (GMT-05:00)

Subject: **Blanton Forest is Growing!**

We are excited to announce that KNLT just sold nearly 400 acres to the Kentucky State Nature Preserves Commission for an addition to the **Blanton Forest State Nature Preserve** in Harlan County. The property connects two existing noncontiguous tracts of the preserve and brings the total acreage of protected forest to 3,510 acres. Blanton Forest is Kentucky's largest known old growth forest and the largest state nature preserve in the Commonwealth. State nature preserves are dedicated areas protected by law for scientific and educational purposes. They are established solely to protect and preserve biodiversity. Proceeds from the land sale will allow KNLT to continue our efforts to add more protected land to the preserve and the Pine Mountain Wildlife Corridor. A portion of the proceeds will also be used for continued stewardship of Blanton Forest.

Thanks for your support!

Kentucky Ant Ecology

Ants are everywhere. And though they are small, they are massively important to almost every ecosystem on Earth due to their huge number of individuals and species diversity (over 15,000 species). They do everything from turning the soil like earthworms, to defending trees and plants from herbivores and pests, to dispersing and burying seeds that turn into forests, and acting as food for larger organisms worldwide.

So why do we find them everywhere? And, why do some areas have more species than others? How do all these species coexist? These types of questions are fundamental to ecology, the study of organisms' interactions with each other and the environments in which they live. As an ecology Ph.D. student at the University of Louisville, I believe that understanding these concepts is critical to grasping how life on Earth functions, what role humans play in that function, and how we can be both a benefit to and benefit from the biodiversity in the ecosystems that surround us every day. Ants provide a wonderful opportunity to delve into these types of questions.

In partnership with the Smithsonian and the National Science Foundation, I am looking at patterns of biodiversity of ants living in the crowns of trees here in Kentucky, across the southern United States, and in the rain forests of Central America. Trees host a surprisingly large number of different ants (over 40 different species in some trees). I am interested in what factors influence ant species diversity in a forest canopy, what allows different species to coexist in a single tree, and what influence ants have on the trees in which they live. A better understanding of the ants will hopefully lead to a better understanding of ecosystems in general and a better understanding of what we can do to preserve the biodiversity of Earth.

Benjamin "Max" Adams
PhD Candidate
Department of Biology
University of Louisville

Max Adams is scheduled to speak to KSNH at our March meeting.



Nature has many scenes to exhibit, and constantly draws a curtain over this part or that. She is constantly repainting the landscape and all surfaces, dressing up some scene for our entertainment. Lately we had a leafy wilderness; now bare twigs begin to prevail, and soon she will surprise us with a mantle of snow. Some green she thinks so good for our eyes that, like blue, she never banishes it entirely from our eyes, but has created evergreens.

~Henry David Thoreau, Nov. 8, 1858

Thanks to KSNH member Chris Knopf for submitting this wintry quote.

Chestnut tree planting at Des Pres Park



Peter Glauber, Cindy Payne and Hester plant a seedling.

Louisville is warming faster than any other city in the nation. The city's paved surfaces soak up daytime heat and keep the air warm throughout the nighttime, creating a deadly heat island effect that has plagued the city's ecosystem, as well as elderly and infirm residents.

"Cities essentially create their own climates," Brian Stone Jr., a professor of city and regional planning at Georgia Tech, told POLITICO. And Louisville is fighting back against its urban heat. The city hired its first ever director of sustainability in 2013 and has been rapidly planting trees across the area to create shade and lessen pollution. One organization—the American Chestnut Foundation—has partnered with the city to plant genetically-engineered chestnut trees in local parks.

Des Pres Park, Louisville, Kentucky.

Captions by Adam B. Lerner and Keith Chasteen.

Mark Peterson/Redux

Raptorous



BRIAN DOYLE

Published in the May/June & July/August 2014 issue of *Orion* magazine

I HAVE BEEN SO hawk-addled and owl-absorbed and falcon-haunted and eagle-maniacal since I was a little kid that it was a huge shock to me to discover that there were people who did *not* think that seeing a sparrow hawk helicoptering over an empty lot and then dropping like an anvil and o my god *coming up with wriggling lunch* was the coolest thing ever.

I mean, who could possibly not be awed by a tribe whose various members can see a rabbit clearly from a mile away (eagles), fly sideways through tree branches like feathered fighter jets (woodhawks), look like tiny brightly colored linebackers (kestrels, with their cool gray helmets), hunt absolutely silently on the wing (owls), fly faster than any other being on earth (falcons), and can spot a trout from fifty feet in the air, gauge piscine speed and direction, and nail the dive and light-refraction and wind-gust and trout-startle so perfectly that it snags three fish a day (our friend the osprey)? Not to mention they *look* cool—they are seriously large, they have muscles on their muscles, they are stone-cold efficient hunters with built-in butchery tools, and all of them have this stern *I could kick your ass but I am busy* look, which took me years to discover was not a general simmer of surliness but a result of the supraorbital ridge protecting their eyes.

And they are more *adamant* than other birds. They arrest your attention. You see a hawk, and you stop what minor crime you are committing and pay close attention to a craft master who commands the horizon until he or she is done and drifts airily away, terrifying the underbrush. You see an eagle, you gape; you hear the piercing whistle of an osprey along the river, you stand motionless and listen with reverence; you see an owl launch at dusk, like a burly gray dream against the last light, you flinch a little, and are awed, and count yourself blessed.

They inspire fear, too—that should be said. They carry switchblades and know how to use them, they back down from no one, and there are endless stories of eagles carrying away babies and kittens and cubs left unattended for a fateful moment in meadows and clearings, and falcons shearing off the eyebrows of idiots climbing to their nests, and owls casually biting off the fingers of people who discover Fluffy is actually Ferocious. A friend of mine deep in the Oregon forest, for example, tells the story of watching a gyrfalcon descend upon his chickens and grab one with a daggered fist as big as my friend's fist, but with much better weaponry, and then rise again easily into the fraught and holy air while, reports my friend with grudging admiration, the bird glared at him with the clear and inarguable message, *I am taking this chicken, and you are not going to be a fool and mess with me.*

I suppose what I am talking about here really is awe and reverence and some kind of deep thrumming respect for beings who are very good at what they do and fit into this world with remarkable sinewy grace. We are all hunters in the end, bruised and battered and broken in various ways, and we seek always to rise again, and fit deftly into the world, and soar to our uppermost reaches, enduring with as much grace as we can. Maybe the reason that so many human beings are as hawk-addled and owl-absorbed and falcon-haunted and eagle-maniacal as me is because we wish to live like them, to use them like stars to steer by, to remember to be as alert and unafraid as they are. Maybe being raptorous is in some way rapturous. Maybe what the word *rapture* really means is an attention so ferocious that you see the miracle of the world as the miracle it is. Maybe that is what happens to saints and mystics who float up into the air and soar beyond sight and vanish finally into the glare of the sun.

Photos of Coopers Hawk courtesy of Kathy and Dick Dennis

PAY YOURSELF FIRST IN 2015

I once read or heard a quote from a financial planner speaking about money management and the quote was “always pay yourself first”. That seemed like good advice, but I really didn’t know or appreciate what that person was getting at with that statement. After a bit of further reading and lot more of hard knocks of paying for kids, schools, mortgages, and, I guess just plain living, that quote resonates more with me. We have to put away for our own needs now and in the future.

Now, when it comes to how I/we spend time, the payback on our choices is just as important, if not more so. Days can get full of distractions and priorities to the point where we lose touch with natural rhythms and don’t stop to observe, listen, and really see. Time spent in nature is our time and it should be considered sacred and non-negotiable.



I challenge all members to make more of a commitment to pay themselves by attending KSNH monthly outings. These are excellent ways to enjoy nature and relax with fellow members. I never fail to learn at least 2 or 3 new things at these outings. We plan these outings to try and provide variety of environments and subjects that would appeal to all interests and abilities.

So, please check out the KSNH web site regularly for upcoming events and make a commitment to “pay yourself first” when it comes to being in nature and learning more about its wonders. Also, be sure to bring friends, family, and especially children so they can experience the same joy and learning. If you have ideas of new places or experiences, believe me, your suggestions are most welcome.

The line-up of activities for 2015 looks first class and we hope you’ll take the opportunity to join in. Your presence could make all the difference in the world to you and others.

Wayne Kimbel

President

Falls of the Ohio Chapter

NEW FROG SPECIES

(NEWSER) – A few years ago, researcher Jeremy Feinberg was looking into why the New York City area’s southern leopard frog had disappeared when he stumbled onto a strange call between a bunch of frogs on Staten Island. The *chuck, chuck, chuck* sound his team heard was definitely different from the sounds of known frogs in the area, and when Feinberg found a video online from another team that had wondered the same thing, the hunt for a new species officially commenced, the *Star-Ledger* reports. “Pretty much within 10 seconds of hearing the calling, we said, ‘Something is really weird here,’” Feinberg says. According to a paper published in *PLoS One*, DNA evidence has verified it is indeed a new species: the Atlantic Coast leopard frog.

The “cryptic species” differs from other leopard frogs in two ways: in its croak and in the spots that run down the backs of its legs. As Feinberg explains to *National Geographic*, it’s pretty remarkable the mating calls were heard at all, as the frog’s breeding period is only a few weeks long and coincides with a time when spring peepers are noisy: “You have to win the jackpot to hear them.” It’s only the second new frog species found in the US in three decades and the first amphibian found in New York since 1854. Scientists decided to make the frog’s official name *Rana kauffeldi* after herpetologist Carl Kauffeld, who had his own suspicions in 1936 that the area was home to not two but three species of leopard frogs, *Smithsonian* reports. The number of leopard frog species worldwide now stands at 19, notes a press release. (A tree-thinning project was tabled because of a rare frog.)

Whooper vs. Sandhill – Correct identification is crucial

With the second of a three-year experimental Tennessee Sandhill Crane season (November 22-23, 2014 and Nov. 29, 2014-January 1, 2015) now in full swing, and the “fourth” experimental Sandhill season starting soon here in Kentucky (December 13, 2014-January 11, 2015) the chance of accidental shootings of Whooping Cranes increases. Kentucky and Tennessee are the ONLY states in the Mississippi Flyway to have Sandhill seasons. Hunters in both states were assigned permits for the Sandhill seasons only after successfully passing online ID tests. And, while this is a commendable effort by Fish and Wildlife to avoid wrong identifications by hunter in the field, it should be viewed as a first step in the effort to educate not only hunters but the general public as well about the federally endangered Whooping Cranes and, in particular, the reintroduced Eastern Population of Whooping Cranes.

As a resident of Kentucky I know firsthand that there is an ongoing need for public education when it comes to species identification. In November 2013 a mated pair of Whooping Cranes was shot on their wintering grounds in Hopkins County by “joy-killers.” Then, in early December 2013, an adult and juvenile Tundra swan were shot and left in a ditch in Warren County. Evidence suggested the shootings were possible mistaken identification by waterfowl hunters – there is a legal Kentucky season on Snow Geese but no season on Swans.

Learn the difference between endangered Whooping Cranes, Sandhill Cranes and similar species from the “Large Water Birds: An Identification Guide” developed by the International Crane Foundation: www.saving-cranes.org/images/stories/site_images/conservation/whooping_crane/large_water_birds_1600.jpg

21 Laws of Nature as Interpreted by My Children

BRIAN DOYLE

Published in the September/October 2014 issue of *Orion* magazine

- 1.** If you shake hands with an evergreen tree and the branch bites you, that's a spruce.
- 2.** Insects rule the world, but they don't talk about it.
- 3.** The reason the ocean is salty is because all the animals have been peeing right in it since before there was even time.
- 4.** One of our grandmothers is dead, and now she is growing flowers.
- 5.** Dad says all beings are holy in the same proportions, except the Los Angeles Lakers, who are demonic.
- 6.** The best way to eat a worm is to have another kid do it.
- 7.** A shrew is like a mouse with a bad temper.
- 8.** Dad says every time you go for a walk in the woods you ought to get credit for a full day of college.
- 9.** Anyone who thinks people are cooler than animals should remember that a lot of animals can eat people.
- 10.** The reason that scrub jays and conifer jays bicker all the time is because they love each other.
- 11.** The way to tell a mammal from an amphibian is snot.
- 12.** Mom says camping is a way to see God up close, but Dad says God loves us and wants us to shower daily and sleep in a bed.
- 13.** Plants are smart because they can eat sunlight and we can't.
- 14.** Dad says people still kill whales for money even though whales have languages and songs.
- 15.** If you find poop in the woods and it's tiny round balls, it's a rabbit. If the balls are larger, it is a deer or elk. If they are really large, you should come home.
- 16.** Eagles can see so well they can see what you did yesterday.
- 17.** Dad says evolution is working to make us less violent and make animals more forgiving.
- 18.** The more money you have, the less you pay attention to plants and birds.
- 19.** Dad says some kinds of trees can drink *clouds*.
- 20.** If you can't make a new ant, don't kill an old one.
- 21.** If you are really sad, go outside and you will feel better after about an hour.

2014 Naturalist of the Year



Randy and John Seymour received their awards at the Christmas dinner

Send your articles and messages to Dave Luzader
dluzader@twc.com for our next newsletter.

Remember to visit our website often for the latest
news and updates.

<http://www.ksnh.org>



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FROM THE PRESIDENT

After a winter that gave us an early look at spring in January the vernal period is finally here. Buds bursting, ephemeral pools bustling with activity, warming temperatures and a refreshing awareness of life is all around. Camping, hiking, all kinds of outdoor sports and activities are well under way. Our Spring Conference at Natural Bridge State Resort Park is one of our favorite places and is being held on April 24, 25, and 26. There will be lots of activities, choices and great speakers to satisfy your naturalistic whims. Natural Bridge has lots to offer even if you no longer can hike up to the arch. The Scenic drive through the gorge never gets old. I see something that I just have to stop and check out on each trip. Wildflowers and wonderful nature views are just begging for that "Kodak moment". Please support KSNH. Don't let the opportunity to participate in KSNH activities elude you. Remember that lost time is never found again (Aughey). See you at Natural Bridge!

Chris Bidwell – president KSNH



Dave Luzader

Spring is a miraculous experience. The whole world comes alive after the winter in which it seemed that everything was dead. The world comes filled with color and the scent of delicious greenery. The world that seemed so dull and cold has come alive once again. Little did we know that beneath the cold hard ground the plants and trees were preparing for rebirth. Spring gives us hope for rejuvenation in our own lives as well. Spring is a time to renew the excitement and zest for life that lives inside.



KSNH Officers & Board

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Falls of the Ohio (Louisville, Ky)

Meets every third Thursday of each month except Jan, Jul, Aug & Dec at the Louisville Nature Center
3745 Illinois Ave. Chapter President: Wayne Kimbel
Email: waykim1@twc.com

Arches of the Cumberland (Slade, Ky)

Meets informally, call President Dell Sasser for details,
606-666-7521 ext. 73559, or 606-233-8938.
Email: del.sasser@ktcs.edu

Don't forget our Spring Conference at Natural Bridge State Resort Park, April 24-26th 2015. I don't know any place better in Kentucky to enjoy wildflowers, geology and nature in general.



We will now be able to accept all major credit cards for payment for merchandise and dues. Your card will be scanned through a device which is attached to a cell phone. Cell service needs to be available for these transactions to occur.

We do have to pay a small fee of 2.7% to PayPal, but we want to offer it as a convenience for our members. PayPal is very secure.

Welcome New Members

Ruth Sauter - FO

Stanley Henderson - FO

John & Pam Glauber - State

Shawna Naidu - State

Angel Rogers - State

Carroll A. Young - State

Corey McGarvey - Student

Elizabeth Hall - Student



THE B-L-T TREE: AMERICAN BASSWOOD – *Tilia Americana* L.

The American Basswood is a frequent medium to large deciduous native tree in Kentucky. I call it the B-L-T tree as it commonly is referred to by its 2 common names – Basswood/Linden and its Genus name – *Tilia*. Basswood/Linden (*T. Americana*) has 2 genotypes/varieties:

- a) Var. *Americana* (L.) – American basswood/Linden whose leaf undersurface is green and found primarily in northern mesic forests.
- b) Var. *Heterophylla* (Vent.) Louden – white basswood whose leaf undersurface is whitish and found primarily in southern mixed mesophytic forests.

The genus *Tilia* taxonomy is confusing as many cultivars exist and exotics have been introduced to North America. These species also readily hybridize. The current thinking is that a single native species (*T. Americana* with the 2 varieties) occurs in North America. Even the family name (*Tiliaceae*) has been replaced by some authorities to the *Malvaceae* family (mallow) based on genetic/dna research.

Other introduced Lindens and cultivars can be found at Bernheim Forest, Jefferson County Memorial Forest, Cave Hill Cemetery, Cherokee Park and many other forest

habitats of Kentucky. American Basswood/Linden covers most of the eastern United States and from Texas to North Dakota. Many *Tilia* species occur in Europe and Asia.

Basswood's mature bark is brown, moderately furrowed and somewhat scaly, similar to walnut and white/green ash bark. Reaching heights up to 140 feet, most specimens average about 80 feet tall. Trees with diameters of 4 foot and over 200 years old have been documented. This tree's wood is soft yet durable and has a smooth grain which makes it easy to carve and work with. Twigs are slightly reddish and zigzag. Basswoods that are damaged/cut (coppiced) are known to send up suckers from their base. Twigs/cuttings that touch soil can take root. Adaptable to most soils, they prefer nitrogen rich, well-drained soil. Basswoods are tolerant of dry-clay habitats, shade, drought, and air pollution. They are less tolerant of city conditions.

American Basswood leaves are coarsely saw-toothed, unlobed, oblique/heart-shaped, asymmetrical bases with branching prominent veins. Petioles can be 2-6 cm on leaves which can be up to 200 cm long. Fall colors vary from drab yellow-orange to brown. Specific to basswoods/lindens are the flower-bearing structures (bracts) which arise out of the axils and are about 8-10 cm long by 1-2 cm wide. At about half the bract's length the flower stalk (peduncle) up to 6 cm long arises. The peduncle supports a non-showy yet fragrant inflorescence of 6-20 white/yellow-greenish unisexual flowers in a drooping cyme. Flowers have 5 sepals, 5 petals, 5 stamens, and 1 pistil – a combination not found in any other species. The fragrant flowers produce pollen and nectar which attract many pollinators. The bracts may also serve as "flags" – pollinator attractors. The trees bloom in May to July with seed dispersal in September through November. Pea size fruits (drupes) with 1-3 seeds are brown and unribbed with a tough impermeable outer coating and remain attached to the bract until the bract drops in a whirling helicopter motion similar to maple samaras. Bracts/fruits rarely are blown far from the mother tree. Seed dispersal is mainly by animals. Trees usually must be 15 years old to produce seed. Some 45 specimens of Lindens/Basswoods (*Tilia*) exist worldwide. This article will cite other *Tilia* to help discuss our native *T. Americana* – especially with its name origin and interesting folklores of this genus.

Tilia, the genus name and the common name Linden, have a very interesting connection to the Linnaeus family. Carl Linnaeus's father, Nils Ingemarsson, had a patronymic name that was good enough for a Swedish farmer but he wanted to enter a university to study theology and a surname was required. Nils' family estate (Linnegard) had a stately huge Linden tree (called Lind in Swedish) on site. Nils decided to take the surname of Linnaeus or "Linden tree man" after his Linden tree. It just so happened that two brothers of Nils' paternal grandmother had previously taken the surname of Tiliander when they set out to study theology. These brothers were also inspired by a mighty Linden tree (*Tilia* in Latin) on their farm. Nils thus followed his uncles' surname adoption by taking the name of the Linden tree from the Swedish form "Lind". Carl Linnaeus' name thus also came from the Linden tree.

The Latin name *Tilia* (which means lime) was already in use in Europe by early herbalists who valued its medicinal qualities. Carl Linnaeus in his *Species Planetarium* in 1753 ascribed the genus name of *Tilia* to the Lindens to honor his great uncles. He appropriately gave the species name, *Americana*, to the native *Tilia* found in North America which had ironically been introduced to Europe in 1752. The genus *Tilia* is not even closely related to lime trees or its fruit. Linden was called the line tree but by 17th century line changed to lime. Lindens/*Tilia* are still known as lime trees in the British Isles. They were also called Linn trees after Linnaeus but it is not used much today. The name *Tilia* was possibly influenced by the Greek PTELA (Elm tree), TILIAI (Black Poplar), or PTELEIA (Broad) in reference to Linden's broad leaves. The common name Basswood comes from the name of the inner bark "bast" used to make many useful fibers as ropes/fabric. Pioneers named it Bastwood but eventually it was corrupted to Basswood.

Linden/Basswood is also known as the Honey tree, bee tree, or humming tree as its fragrant flowers attract many species of bees. On a busy day of collecting nectar/pollen for honey making, bees can be heard humming from several feet away. Basswood honey is noted for its excellent qualities/taste. White basswood and yellow basswood are 2 other common names in reference to the color of its wood. One name still used in the western Great Lakes region is wickup or wikup tree. The Meskwaki-Fox Indian Nation called the bast fiber wickup/wikup.

American basswood was used by Native Americans/pioneers for many medicinal and structural usages. Major Nations as the Cherokee, Algonquin, Iroquois, Huron, Chippewa, Mohawk, and Fox used basswood for the following medicinal reasons: lung ailments as colds, cough, flu, consumption (TB); as an eyewash, for heartburn, "overheated" (alcohol) inflamed stomach, "weak" stomach, abscesses/boils, headaches, anxiety, restlessness, insomnia, bleeding internally/externally, diarrhea, burns, and worms. The Cherokee would chew its bark and spit the juice onto snakebites but there was one little catch- the tree had to have been struck by lightning to be effective. Today Cherokee use a bark jelly as a nervine for headache, hysteria, and indigestion. Early settlers often adopted Indian medicine practices and used the Linden also for liver ailments, gout, kidney stones, and other medicinal needs. Modern herbalists prescribe Linden concoctions for high blood pressure, insomnia, cough, fever, diuretic, infection, spasms, as a sedative and for liver diseases. It is advised that frequent use of basswood flower tea may be cardiotoxic. No more than 2-4 grams a day should be used and do not use for children, pregnancy, or if breast feeding. Medicinal benefits of Lindens have not fully been documented.

This genus *Tilia* has been used to make many necessary items from Native Americans to wood carvers/workers today. Crates, doors, veneers, butter churns, carriage bodies, cooperage, baskets, bowls (Wadsworth in his "Hi-awatha" has her wedding bowl made of basswood), musical instruments, yardsticks, honeycomb frames/hives, Indian face masks, rope, twine, and thread are just some of the items made from basswood. John Smith, in 1612, recorded the Indian process of thread/fiber making from the bast and explorer Father Louis Hennepin, in 1698, recorded the making of fishing lines and nets. Its smooth grain makes it a favorite of wood carvers. In 1794 Matthew Lyon developed a paper from basswood and rags. Other uses of *Tilia* include making honey, charcoal, perfume, tea, timber (coppicing allows cut/damaged trees to still be harvestable every 25 years), and spiles for tapping basswood as well as maples for syrup making. They make great landscaping trees as they are stately, durable, tolerate shade/drought, fast growing, adapt to most soils, and with dense foliage provide great shade. Linden leaves are rich in nitrogen, a good source of mulch and nutrients.

Wildlife has a great friend in basswood. The heartwood, not resilient to decay in older trees, develops cavities which provide shelter for many species. Leaves and twigs are a great food source. Beetles, aphids, flies, moths, butterflies utilize the trees sap and the flowers pollen/nectar. Aphids are "farmed/milked" for the "honeydew" that aphids create from the tree's sap. Aphids sucking the sap can result in excess sap formation which can drip onto items under the tree – particularly cars! This sticky/messy sap, much like maple sap, can become quite a problem. Basswood supports over 150 species of caterpillars in North America. A tree caterpillar, checkered fringed prominent (*Schizura ipomoeae*, previously known as morning cloak prominent) requires keen eyes to detect it as it is camouflaged to appear as a dead section of the leaf it is feeding on. Seeds are eaten by most mammals. They are edible by humans but not palatable, due to their mucilaginous texture/taste.

American Basswood seeds are dispersed by wind, gravity, and animals and can remain viable for years. The primary cause for failure to germinate, regardless of seed bed conditions, is the impermeable outer seed covering (testa). Seed stratification is imperative. Basswood may also be propagated by shoots, saplings, cuttings, and grafting. Lindens are damaged by many vectors. Mice and voles are known to girdle the bark leading to death of the tree. Rabbits and deer feed on saplings and young shoots. Many insects defoliate the tree, especially caterpillars as the Linden loopers, leaf miners, spring/fall cankerworms, tussock moths, gypsy moths, and the forest tent larvae. Other insect offenders such as the linden lace bugs, linden bores, beetles, spider mites, and scales can damage the bark, twigs, and wood and allow diseases to penetrate and infect conductive tissues. Diseases as black mold, anthracnoses, leaf spot, verticillium, wilt, molds, fungi, cankers, rots, stains, and powdery mildew can severely threaten the trees life span. Prolonged hot/dry spells and fires which easily destroy the thin bark also kill basswoods. Fortunately these hardwood trees are one of the least susceptible to a late spring frost.

B-L-T folklore/mythology/tales

Most Native American Nations have stories/beliefs regarding basswood. The Cherokee and Iroquois believed a stone giant could only be killed with a club made of basswood. The Cherokee also believed that this tree rarely/never got struck by lightning (even though they use one for snakebites) and its shelter should be sought in dangerous storms.

Many countries also have many basswood lore/mythological tales. In Israel the Linden (Teil) has biblical ties – as appearing dead in the winter but its life giving fluid (sap) is present and will bud/bloom in time. This symbolized the Holy Seed in the children of Israel (Isa 6:13). Many Israeli girls are named Teila in honor of the Teil tree. Slavic mythology holds a Linden (Lipa) sacred. Poland has many villages named "Swieta Lipka" – merry

holy lime/linden. A Linden is a national emblem of Slovakia Slovenia, Czech Republic and the Sorbs. The Slavic months of June and July derived from the Lipa root. It is also root for the German city of Leipzig and the Lipizzan horse breed. In Baltic mythology a Linden was sacred to the goddess Laima. Lithuanian women prayed/offered sacrifices at this tree asking for luck, help, and fertility. Germanic peoples held a Linden hallowed also and held trials/judicial sessions under them. Verdicts were returned and read “sub tilia” (under the Linden). A most famous street in Berlin is named “unter the Linden” in honor of the trees historical importance. This road is lined for miles by the stately Tilia. Linden is the Germanic tree of lovers. Greek/Roman writers as Homer, Horace, Virgil, Ovid, and Pliny cite the Linden and its virtues. The Greek mythological nymph, Philyra (named after the Greek name for Linden – Pryp), was desired and seduced by Kronus. When caught in flagrante delicto (red-handed), Kronus disguised himself by turning into a stallion. Poor Philyra gave birth to a centaur (half man- half horse). Philyra was so ashamed she begged the gods to help her get out of the situation – they changed her into a Linden tree! The Roman poet Ovid told a story of a poor elderly couple, Baucis and her husband Philemon, who were the only villagers to welcome and assist two starving beggars (the disguised Greek gods Zeus and Hermes or Jupiter and Mercury in the Roman version). For their kindness the gods granted the couple their wish to die together and always remain together. When time came for their deaths, they both died on the same day. Philemon was changed into an oak and Baucis into a Linden and both were intertwined for eternity. The Norse mother goddesses, Freya and Frigga, held a Linden tree sacred. Women revered these goddesses and prayed to them to protect mothers and children. Asking for intercession from an image of the Virgin Mary carved form Linden gave extra power to a woman’s prayer. Linden/basswood tales appear in many other countries. These trees are cited in poems, books, plays, songs, and romantic symbols. In modern popular culture, a British TV sketch show had Queen Victoria alluding to the smell of a Linden tree resembling that of semen!

Tilia Americana – American/Basswood/Linden (B-L-T tree) is a beautiful, stately, important, ecological tree of our Kentucky forests and landscape. It’s multiple uses past and present by man and wildlife for survival has a remarkable record. Countless folklore, tales, mythological stories, and citings in literature are extremely interesting and thought provoking. On your next walk in our beautiful forests/parks, look for this tree with its unusual bracts and asymmetrical leaves. Maybe you will spot the checkered fringed prominent!

Chris Bidwell
President KSNH

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David Wicks, who KSNH members know from our paddle on Beargrass Creek last year, is the Executive Producer of a planned video documentary on Beargrass Creek. At the recent Wild and Scenic Film Festival, a kick-starter campaign was launch to raise funds for that cause. This waterway and its restoration/protection is important for all of us. Here is a link that provides information on this effort and a means to donate to help bring it to reality.

We hope members will consider helping with this worthy undertaking.

<https://www.kickstarter.com/projects/884806024/beargrass-the-creek-in-your-backyard>

Looking Ahead.....

I am pleased that Chris Chandler will speak at our local Falls Chapter meeting in September. A Louisville native, Chris is the newly appointed Director of Urban Conservancy for the Kentucky Chapter of the Nature Conservancy. He really is one of the good guys and someone I'm proud to call a friend. Below is a short Q & A that was done with him by one of their internal staff that gives a good overview. He'll have a lot more to say to us in September. Wayne Kimbel



Chris holds a B.A. in communications from the University of Louisville and has more than five years of experience serving as a project manager and business developer for several Louisville-based ecological consultants including most recently with Eco-Tech. His professional background has given Chris a demonstrated ability to work with private landowners, governmental agencies, volunteer organizations and other partners on a variety of habitat restoration projects already underway in Louisville. A certified Arborist, Chris also currently serves in leadership positions with local non-profit and community-based environmental organizations.

Nature.org: Have you always had an interest in conservation? Chris Chandler: Yes. After many years spent outdoors visiting friends' farms and lake cabins, that interest solidified at the age of thirteen when I had an opportunity to spend three weeks hiking the Appalachian Trail in Vermont and New Hampshire during a summer vacation. Since then I have continued to return to the Trail. In fact, I met my wife there. She was going south, and I, north!

Nature.org: How did your career path lead to working with The Nature Conservancy? Chris Chandler: In adulthood I realized that I had become an "armchair naturalist." While I spent a great deal of time out in nature -- hiking, biking, climbing, skiing -- I couldn't identify the flowers, plants and trees around me. I began seeking opportunities to gain that knowledge. I was living in Northern Virginia and had been volunteering, doing "boots-on-the-ground" conservation work. I loved it so much that I eventually found employment with a land development company as a surveyor where I gained hands on experience in the processes which inform land use decisions. Documenting areas that were about to be developed revealed to me the importance of land preservation and stewardship -- especially in urban areas. Upon moving back to Louisville, I sought out employment emphasizing a land preservation ethic. I found work which offered a unique opportunity to interact with private landowners, municipalities, government agencies and land trusts to study, restore and expand natural systems. I look forward to bringing skills gained in this role -- eradicating invasive/exotic pests, planting thousands of trees, restoring wetlands and meadows -- to The Nature Conservancy's new program in my native city.

Nature.org: What will you focus on in your new role? Chris Chandler: Urban conservation represents a new item on the Conservancy's Kentucky agenda and mine is a new position. In it I aim to work with partners to make our city more resilient to environmental challenges like a growing population and severe weather events. I also hope to engage residents in neighborhoods across the

city in hands-on tree stewardship to protect and expand our city's tree canopy. Doing so can reduce air temperatures, improve air quality and provide an overall health benefit to our entire community. I plan to hit the ground running thanks to my professional experience and involvement in a number of community-based organizations.

Nature.org: Can you name a specific goal you hope to achieve in the long-term? Chris Chandler: I am excited to be affiliated with The Nature Conservancy as this will bring an energy, and added capacity and resources, which will greatly benefit Louisville. I look forward to determining how the Conservancy can complement existing initiatives and where we may take the lead in meaningful projects which can immediately benefit the city. Then I hope to identify several big projects where we can make a lasting impact, quickly, to represent our commitment and bring attention to the urgency of this work. I also want to approach urban conservation projects in ways which bridge the socio-economic divide. This work represents and should serve every community. We have touched upon this with the Conservancy's Leaders in Environmental Action for the Future (LEAF) program and intend to do more to reach underserved portions of the community.

Ohio River Birding Festival

I've heard it said that with all the activities usually scheduled this time of year that we need two Aprils. With spring events everywhere, it's easy to agree with that view. For ardent birders there is one upcoming festival of note. The Evansville Audubon Society is hosting the annual Ohio River Birding Festival from April 17 -25. The latter part would conflict with the KSNH spring conference, but there are many items slated for the weekend of April 17-19; many of which are free. The James Audubon State Park is the base for this event and worth a visit even without this festival if you have not been there. The museum with his original prints is wonderful.

Here is the link with information on this event. Happy Trails!

<http://www.ohiovalleybirdingfestival.org/>

Wayne Kimbel

Corey McGarvey

Recipient of
Kentucky Society of Natural History LRSEF Junior
Award (Grades 6-8) At
Louisville Regional Science & Engineering Fair
March 7, 2015
For
Salt Stressed Plants Communication: Soil Condition
Information



Corey McGarvey is a 7th grader at St. Francis of Assisi School. His teacher/sponsor is Fred Whittaker. Corey plays competitive baseball and basketball. Corey hopes to attend Manual HS where his older brother Tate and older sister Ellie attend. Corey's parents are big fans of Natural Bridge, Mammoth Cave and the beautiful wonders of Kentucky. They hope to join us at one of the KSNH Conferences.

The purpose of Corey's project is to learn if plants communicate with each other in stressful soil conditions that contain volatile organic compounds. In other words do Plants communicate above ground about conditions below ground?

Corey received at the LRSEF March 7th, 2015:

- 1: LRSEF 1st place in Category "Plant Sciences" Junior Division; \$60; LRSEF Participation Award; LRSEF Backpack. This year Corey will make his second trip to KY State Science and Engineering Fair (KYSEF) on March 27th-28th at Eastern KY University, Richmond, KY.
- 2: An invitation to compete in the BROADCOM M.A.S.T.E.R.S (Math; Applied Science, Technology and Engineering for Rising Stars) – a Middle School Competition in Washington, DC
- 3: KSNH award (\$25; KSNH Certificate; plus Membership and Fieldtrip). He will give a short presentation of his project at our next meeting.

Mary Alice Bidwell at the Science Fair



Elizabeth Hall
Recipient of
Kentucky Society of Natural History Senior Award
At the
Louisville Regional Science and Engineering Fair
March 7th 2015
Artificial Lights Effect on Plant Growth

Elizabeth Hall is a 9th grader at Ballard High School with a 4.0. Her teacher/sponsor is Ronda Fields. Elizabeth volunteers at the Mother/Baby unit at Baptist East Hospital; plays the violin in the Ballard Orchestra and enjoys playing volleyball for the Ballard Team.

She would like attend Columbia University in New York City, go into their excellent medical program and hope to become an OBGYN. Biology is her favorite class and she will be advancing to a College Biology class her sophomore year. She also loves Spanish and different types of cultures. She states that "Sometime in my life I would love to travel the world and open a clinic in poor countries to care for women and their babies".

The purpose of her project was to determine "Artificial lights effect on plant growth". She used four different types of light – growth light, red light, black light and fluorescent light. Then she recorded the growth of the plants under each type of light. The fluorescent light outperformed the other lights.

Elizabeth received, at the Louisville Regional Science and Engineering Fair (LRSEF):

1: LRSEF 3rd place in Category Plant Sciences, Senior Division (grades 9-12); \$45; LRSEF participation certificate; LRSEF Back Pack and a chance to continue at the next level at the Kentucky State Science and Engineering Fair(KYSEF) on March 27-28, 2015.

2: Louisville Tropical Fish Fanciers Award

3: Kentucky Society of Natural History (KSNH) Award: \$25; KSNH Certificate; Membership; and field trip.

Elizabeth thanks KSNH for having an interest in her project and the Special Award. She would like to attend our next meeting and present her project.

A special thanks to Wayne Klmbel and Chris and Mary Alice Bidwell for judging on March 7th. Also to John Gilkey for preparing KSNH Certificates and a letter of Introduction to KSNH.



Dear Kentucky Society of Natural History Members,

We are looking for support to help engage our community in Beargrass Creek.

Beargrass: The Creek in Your Backyard - A kickstarter initiative

“Beargrass: The Creek in Your Backyard”, examines Louisville’s primary urban stream in all its majesty and misery. It will be a vital conversation starter; to engage all residents and visitors in the future of the creek and the neighborhoods that comprise its watershed. The documentary will create a common narrative that can be promoted by neighborhood, public health and environmental organizations. We will create a portrait of the creek and Louisville’s relationship to show the interrelationship between the natural, cultural and built environments

We are seeking stories (personal, historical, ecological or just inspirational) about Beargrass Creek. If you have something that you would like to share that might be included in the documentary, please email beargrasscreek1@aol.com.

Morgan Atkinson the writer/director of the documentary is the owner of Duckworks, Inc, a production company based in Louisville, KY. A documentary filmmaker for over 30 years with 15 documentaries aired on KET and PBS, he grew up roaming the banks of Beargrass creek. Over the years he has produced dozens of commissioned programs as well as his independent work. Much of the independent work has focused on the community of Louisville. This includes the Tom Owen series of neighborhood walks. Among his recent work was “Wonder: The Lives of Anna and Harlan Hubbard” and “The Many Storeys and Last Days of Thomas Merton”. To get a taste of Morgan’s work, check out the trailer for “Wonder” at annaandharlan.com. “Wonder” is based on a book by Wendell Berry and is narrated by Mr. Berry.

We are asking for your support, could you [sign on to kickstarter](#) and pledge some funds, there are some great incentives, check it out. Instead of clicking on the above link, you could type in <https://www.kickstarter.com/projects/884806024/bear-grass-the-creek-in-your-backyard>

We have attached a flyer about the documentary project, please share it with your friends. Any questions or ideas, please contact David Wicks – dwick1@gmail.com
Kind Regards,

David

PS: thanks for helping us save and restore our creek! Please pass this note on to others who love the creek and would like to see it cleaned up so it is a community treasure.

--

Dr. David Wicks

dwick1@gmail.com

Small predator diversity is an important part of a healthy ecosystem

By Matt Swayne

February 23, 2015



UNIVERSITY PARK, Pa. -- Biodiversity, including small predators such as dragonflies and other aquatic bugs that attack and consume parasites, may improve the health of amphibians, according to a team of researchers. Amphibians have experienced marked declines in the wild around the world in recent decades, the team added.

The study suggests that dwindling global environmental biodiversity and worldwide spikes in infectious diseases may be linked, said Jason Rohr, associate professor of integrative biology, University of South Florida.

"In the last century, there has been an unprecedented global increase in infectious diseases and a concomitant decline in and homogenization of biodiversity," said Rohr. "The controversial 'dilution effect hypothesis' suggests that the two phenomena might be linked, or that biodiversity often decreases disease risk."

In the study, which included a series of laboratory experiments, field surveys and mathematical modeling, the presence of various species of dragonfly larvae reduced the infections in frogs caused by parasitic flatworms called trematodes, said [Val Beasley](#), professor and head of the [department of veterinary and biomedical sciences](#), Penn State, who worked with Rohr and whose research group collaborated with Lucinda Johnson, senior research associate and director of the Center for Water and the Environment, University of Minnesota Duluth, to complete the field study.

Beasley said that various species of trematodes penetrate tadpoles, sometimes killing them and at other times weakening them with tissue damage, kidney failure, or severe limb deformities when the tadpoles develop into frogs. He added that other vertebrate species commonly catch trematode infections from bodies of water. These include wildlife, domestic animals and humans -- mostly children -- who are commonly affected by schistosomiasis in tropical parts of the world.

The researchers, who release their findings today (Feb. 23) in the Proceedings of the National Academy of Sciences, did not see a similar reduction in trematode infections in the presence of larval damselflies, which are intraguild predators, meaning they attacked and killed not only the parasites but also the tadpole hosts.

According to Rohr, most research on biodiversity focuses on the diversity of parasite hosts, while this study reveals the importance of the diversity of species that attack and eat parasites.

"In our wetland survey, our microcosms and disease models, we discovered that there were fewer flatworms in frogs where there were more species of flatworm predators," said Rohr. "Additionally, the field study indicated that the diversity of these predators was a better predictor of flatworm infections than nutrients, frog immunity or the diversity and abundance of hosts."

The researchers emphasized the similarities between their findings and research on roles of small predator communities that help control crop pests. They concluded that both management of crop pests and efforts to prevent parasitic disease can be guided by the need to conserve the biodiversity of small predators.

Co-authors with Beasley, Rohr and Johnson included David J. Civitello, postdoctoral scholar in biology and Neal T. Halstead, doctoral candidate in biology, both of the University of South Florida; Patrick W. Crumrine, assistant professor of biology, Rowan University; Andrew Miller, graduate assistant of geology and environmental systems, University of Maryland; Anna M. Schotthoefer, project scientist, Marshfield Clinic Research Foundation and Carl Stenoien, doctoral candidate in ecology, evolution and behavior, University of Minnesota.

The U.S. Department of Agriculture, U.S. Environmental Protection Agency, National Institutes of Health and the National Science Foundation supported this work.

BELLARMINE SCHOOL OF ENVIRONMENTAL STUDIES

Our planned visit to the School in February was cancelled due to severe weather, which was a shame. I tried to capture a few important points of this program that ties in strongly with the mission of KSNH

It's always gratifying to speak to a person that is creator or discoverer of something that impacts the world. It can be an idea that seems obvious in hindsight, but it took that person to conceive a plan, execute it, and continue to do on-going maintenance of it. I believe it was Kurt Vonnegut that once said "Another flaw in the human character is that everyone wants to build, but nobody wants to do maintenance". I recently met with a guy that fills both bills in Dr. Robert Kingsolver with Bellarmine University.

The Program was put in place with Dr. Kingsolver spearheading the effort. He had been serving as Dean of Bellarmine's Arts and Sciences Department since 2004, having come to that post from a prior 15 year position with Kentucky Wesleyan. Bellarmine's commitment to meeting the 21st Century educational needs appointed him to the position of founding dean of the School of Environmental Studies in 2009. This is the first program of its kind in Louisville.

In the short time that he has been in this post, Dr. Kingsolver has been able to focus on broadening the community and regional level of environmental literacy, while maintaining a high level of scholarship in environmental sciences. The program initiated a minor in Environmental Science in 2009 and a BA and BS tracts in the field in the spring of 2010. In keeping with the University's liberal arts underpinning, students are also required to take courses in other departments to augment their core studies. It's interesting that Dr. Kingsolver does a lecture each semester to MBA students.

In developing a strong program it is, of course, necessary to attract individuals possessing the credentials and dedication to the school's mission. In his presentation that included a brief overview of backgrounds, I was impressed by the spectrum of capabilities. Two examples are Kate Bulinski in Geology and Martha C. Mazur in Aquatic Ecology. Both of these have significantly contributed in print within professional publications as well as in oral presentations on a local and international level.

The one major take-away for me from our conversation was his commitment to develop a mini-farm of about ½ acre on Bellarmine's property that would be a hands-on laboratory for students to practice sound horticultural practices. This small parcel would also be used as a source for produce that could be sold to local vendors and caterers. Grants to aid with this effort are sought on an on-going basis. This demonstrates the desire to ensure that the program gets stronger by serving beyond the campus.

There are many ambitious, but achievable, goals that the program has developed for itself. These would include the launching of a new environmental learning community via the school, the development of new laboratory space for faculty (funding effort underway), the hosting of public events each semester, the pairing of alumni mentors with senior undergraduates, and community service in areas such as sustainability .

There is a Bellarmine Outdoor Club that consists of students doing field trips together for fun and to learn. We are hoping that KSNH can partner with these students and faculty for mutual benefit. All learning certainly doesn't happen in the classroom or laboratory. This is reflected in Dr. Kingsolver's Bio which lists his extracurricular activities as poetry, creative writing, playwriting, gardening, and hiking.

KSNH wishes nothing but growth and success for this valuable addition to Bellarmine University and the region. Thanks to their faculty for their hard work in building it.

Here is the link to the Bellarmine School of Environmental Studies:

<http://www.bellarmine.edu/green/>

Finally, the University's W.L. Lyons Brown library has a wealth of resource material for anyone wanting to research almost any topic relevant to the environmental and natural sciences.



Dr. Robert Kingsolver
Wayne Kimbel

Beargrass: The Creek in Your Backyard



Written and directed by Morgan Atkinson,
executive producer David Wicks

*A look at Louisville's Beargrass Creek, its history,
its miseries and its glorious possibilities. It is not your usual documentary.*

Please email us at beargrasscreek1@aol.com and we will send you the link to our kickstarter campaign.

You can pledge your support to make a movie that will change our community's perception and understanding of Beargrass Creek. There are amazing rewards for contributors.

All proceeds go to the Beargrass Creek Alliance

Send your articles and messages to Dave Luzader
dluzader@twc.com for our next newsletter.

Remember to visit our website often for the latest
news and updates.

<http://www.ksnh.org>



Kentucky Naturalist News

Official Newsletter of the Kentucky Society of Natural History

Volume 73 Number 3 Summer 2015

FROM THE PRESIDENT

I hope everyone has a fun/safe/enjoyable summer. With an increase of melanoma, do not forget your sunscreen, caps, and hats. Heat on these summer days can lead to dehydration in a short and unforgiving manner. Always have water available. Our Falls of the Ohio Chapter summer picnic is July 15 at the Jefferson County Memorial Forest. The Fall State Conference in the Mammoth Cave National Park area is October 16, 17, 18. The agenda and registration are posted on our web site. There are lots of choices/events to choose from. Let's continue having great turn outs for these conferences. I appreciate everyone's support of KSNH activities and the input you loyal members have given.

Have a great summer!
Chris Bidwell



KSNH Welcomes New Members

Ruth Sauter, John & Pam Glauber, Shawna Naidu, Steven & Bailey Smith, John & Donna Block, and Lisa Thomas.

Victor Fife, Angel Rogers, Carroll A. Young, and William Franck.

Kate Schaefer as a new student member

We hope that our new members will enjoy what our organization has to offer to members.

Natural Moments

Whether one is watching a thrilling thunderstorm or looking up at a mighty tree, the experience of nature is one of awe. One cannot help but marvel at the intricate design of a single leaf, or the roar of a great waterfall. Time spent in nature is time spent realizing that you don't know it all and that you never will. The earth is meant to be enjoyed by its inhabitants. That includes keeping it in the pristine condition in which it was discovered. Everyone has a part of the earth that they relate to the most. Whether it is a majestic mountain range, a roaring waterfall, a bouquet of flowers, or the calm of the woods, these are places to get to know oneself and build bonds with family.



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Falls of the Ohio (Louisville, Ky)

Meets every third Thursday of each month except Jan, Jul, Aug & Dec at the Louisville Nature Center 3745 Illinois Ave. Chapter President: Wayne Kimbel
Email: waykim1@twc.com

Arches of the Cumberland (Slade, Ky)

Meets informally, call President Dell Sasser for details, 606-666-7521 ext. 73559, or 606-233-8938.
Email: del.sasser@ktcs.edu

FALL CONFERENCE
MAMMOTH CAVE NATIONAL PARK
October 16 - 18, 2015

COMFORT INN - CAVE CITY

Please download the registration form from our website: <http://www.ksnh.org>

Falls of the Ohio Chapter Picnic
July 16 (see July Events)



Matrimony Vine *Lycium barbarum*



MATRIMONY VINE – GOJI BERRY (*Lycium barbarum* (L.))

Just when you think you've seen all the non-native/invasive in your area, another pops up. Just recently walking in Cherokee Park, I noticed "vines" trailing down Christensen Fountain. Upon further inspection the "vines" were actually branches of a shrub on top of the fountain that drooped down to appear "vine-like". Not having seen this plant before led me to investigate this new-comer. This shrub is known as the Matrimony Vine, Goji Berry, and Wolfberry - *Lycium barbarum* (L.), an introduced shrub to the United States around 1900 from Eurasia, especially China. It was imported as an ornamental, hedge, and for erosion control. Matrimony Vine has been cultivated commercially for horticultural, culinary, medicinal, and herbal usage in China for centuries. It has escaped from cultivation into 48 states and Canada. It is listed as frequent in Kentucky. The use of the Matrimony vine or Goji was first recorded in the first century AD in Chinese literature to promote age longevity. This exotic grows well in disturbed ground, along roads/railways, and abandoned agricultural

sites. It prefers sun to partial shade in well-drained areas. It tolerates moist or dry and normal/loamy sandy soil. Although called Matrimony Vine, it is actually a shrub that gets up to 10 feet tall and 8 feet wide. Its thin, weak branches droop down giving it a vine appearance. Short, weak thorns may be present on older specimens. Alternate dull green, oval to lance shaped leaves, up to 2.5 inches long; have smooth edges and short petioles. Bell-shaped flowers bloom early spring into early fall. The flowers, whose color is usually purple/lavender to white, are up to 15 mm wide with 5-6 lobes. Plants are self-pollinating but can be cross-pollinated by insects, especially bees. Bright red, oval berries about ¼ inch long and half as wide grow on long stemlets from the leaf axils. Berries can have 10-60+ seeds which can be toxic when unripe, due to atropine-like compounds. Touching the berries can turn them black. The berries are edible when ripe (bright red) and have a tart-tomato taste. Matrimony Vine is a member of the Solanaceae or nightshade Family (potato/tomato family).

Matrimony Vine, like most plants, has many common names. Cited most often are: Goji berry, Wolfberry, Duke of Argyll tea, love vine, love berry, aphrodisiac plant, boxthorn, happy berries, sweet life berry, false Jessamine, gouchi, or gouzi berry. Carl Linnaeus provided the Genus/species name of *Lycium barbarum* in 1753. The genus name *Lycium* is derived from the Greek language, applied by Pliny the Elder (23-79) and Pedanius (40-90) to a plant known as Dyer's Buckthorn. It probably was a *Rhamnus* species and was named for Lycia, the province now located on the southwest coast of Turkey in which it grew. The species name *barbarum* is Greek for foreign and from Latin *barbatus* meaning bearded or barbed, as the plant may have long, weak hair or thorns. Some of the common names have interesting origins. Wolfberry is said to have come from a Chinese legend about how an alpha wolf maintains his dominance by ingesting the Goji berries. The name Goji berry, probably the most common English name, was created as a marketing name as it is an approximation of the Chinese pronunciation of this plant. It is known as Duke of Argyll tea/plant in England because the Duke introduced the plant to the United Kingdom in 1730's. It is still used there under this name. The names sweet life berry, happy vine, love vine, and aphrodisiac vine are based on the plant's reported sexual enhancement properties and its fostering a sense of well-being and stress reducing attributes. Matrimony vine's name origin has been lost but it is assumed that if the plant's supposed assets of improving sexual performance, increasing seminal emission, improving impotence, as well as improving menopausal issues, are true then the resultant bliss could very well lead to matrimony!

Matrimony vine has numerous culinary, medicinal, herbal, folklore, and horticultural usages. The berries can be eaten, used in teas/tonics, and as a flavoring additive. The fruit's taste is described as sweet licorice, peppermint, cress, or tomato flavor. Goji berry flavoring can be added to soups, breads, rice, oatmeal, smoothies, and many other foods. Only the ripe berries should be eaten or used. Berries, especially unripe ones, have been known to be toxic to dogs. Some texts cite the plant as poisonous to man even though no known toxicity or deaths have been documented in over several thousands of years of usage. In studies using mice, the Lethal Dose 50 (L.D. 50 means when 50% of the animals in the study died) was 8.3 gm/kg which equates to 500 gm/kg for a human – an impossible dose/amount to ingest! Animal deaths are associated with the atropine effects which are manifested when extremely high doses are ingested. Atropine over dosage can cause serious heart rhythms, extreme confusion, hallucinations, and even death. All studies to date have shown Matrimony vine to be safe for humans. But, as with any over the counter remedy, one should consult your own doctor to be sure that no interactions with other prescribed medicines or pre-existing conditions could occur. People allergic to plants in the Solanaceae family (nightshade: potato, tomato) must avoid Matrimony vine.

Goji berries are known to be high in Vitamin A, B complex, C, and Vitamin E which is generally not found in fruits. Powerful antioxidants, polysaccharides, amino acids (berries are 13% protein), and many other beneficial chemicals are also found in the fruit. Medicinal usages for Matrimony vine are quite varied. Goji tea,

berries, juice, tonics, and pills are used for high blood pressure, elevated cholesterol, diabetes, male impotency, menstrual disorders, poor eyesight, glaucoma, macular degeneration, dizziness, arthritis, asthma, chronic cough, fever, internal bleeding, nosebleeds, TB, itching, other skin ailments, Alzheimer's, breast/liver/blood cancers, leukemia, fatigue, ringing in the ears, infections, and erectile dysfunction. Matrimony vine is also reported to improve age longevity, the immune system, one's yin, one's over-all sense of well being, and act as an aphrodisiac!

Scientific studies of the plant's benefit in Alzheimer's, longevity, male sterility, cancers, and immune system bolstering show real promise but no definitive proof of its effectiveness can be cited due to insufficient data and/or research trial populations too small to confirm data. In the case of male sterility/impotence, Matrimony vine berries have been used in China for over 3000 years with numerous documentations of successful cases. Scientific research does show the berries protect sperm from hyperthermia, increase male hormones, and increase sperm quantity and quality through the action of the berries powerful antioxidants and vitamins especially Vitamin E. Its claim to be an effective aphrodisiac may be warranted. As to Matrimony vine's increasing age longevity, which was first documented in the 1st Century AD, it too may be effective as studies have shown the berries many polysaccharides prevent neuronal loss. Chinese legend/folklore cites that an herbalist from Northern China, who drank Goji tea every day, lived to be 252 years old!

Horticultural use of Goji shrubs as hedges/fence rows is due to their compact size, discouraging thorns, fast growing, inexpensiveness, beauty, and easy maintenance. Matrimony vine can be grown from plants, cuttings, and seeds. Seed dispersal by endozoochory (seeds passing intact through animal bowels) occurs as the bright berries attract and are eaten by birds and mammals. In Afghanistan, camels are known dispersers. Human dispersal of Goji berries (anthropochory) occurs through using plants for culinary/medicinal/horticultural usages which allows the plant to escape cultivation.

Matrimony vine, yet another exotic to invade North America, is on the increase. On your nature outings you can stop its spreading by easily weeding it out. With such assets of the Matrimony vine – beautiful flowers, bright red berries, low maintenance, edibility, attraction to wildlife, and its many reported horticultural, culinary and medicinal claims (especially as an aphrodisiac) – it will be available for some time. England has made it illegal to import it due to plants possibly being infected with mites and being vectors of diseases that attack other Solanaceae family plants, such as potatoes or tomatoes. At present Pennsylvania requires inspection of imported Goji plants.

Goji tablets/capsules/teas are okay. But let's leave the Matrimony plants in Eurasia!

Chris Bidwell – state president KSNH

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- 15) <http://www.pfaf.org/user/Plant.aspx?LatinName=Lycium+barbarum>
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Frogs face virus risk in garden ponds

Researchers from the University of Exeter found that the severity of ranavirosis, a devastating disease that kills thousands of frogs each year, increases in the presence of exotic fish. The use of garden chemicals was also associated with increased severity of the disease.

The study, which is published in the journal *PLOS ONE*, highlights the risks of releasing fish into garden ponds. Fish may amplify viral levels in the environment or cause stress hormone production that reduces immune function in wild frogs.

Lead author Alexandra North from the Environment and Sustainability Institute at the University of Exeter's Penryn Campus in Cornwall said: "Our results show that we can all help limit the impact of this devastating disease. It is important to reduce the use of garden chemicals like slug pellets and weed killers, which weaken the immune systems of frogs, and to stop stocking ponds with non-native species like goldfish. Crucially, people should not move fish, frog spawn, pond weeds or ornaments from one pond to another as this could spread the disease."

The researchers analysed a long term dataset of mortalities in the common frog from across Britain to identify which characteristics were associated with ranavirosis. Since 1992, UK pond owners have reported common frog mass mortality events to the charity Froglife which administers the dataset.

Ranavirus causes systemic haemorrhaging and severe skin ulcers in amphibians which can result in a loss of limbs, and often death. It is thought to have entered the UK via the pet trade and has contributed to the global decline in amphibians.

Dr Amber Griffiths from the Environment and Sustainability Institute at the University of Exeter's Penryn Campus in Cornwall said: "We are currently undergoing a mass extinction of species, and amphibians are particularly under threat. The unprecedented loss of amphibians indicates widespread environmental degradation. The interactions between disease and climate change are deadly. The deeper problem is climate change, but our study shows that people can make an immediate difference by changing their habits in their own gardens."

The study highlights links between disease severity, pond characteristics and garden practices which demonstrate the potential for garden owners to take simple precautions that will help to reduce ranavirosis incidence and severity in the wild across Britain.

Story Source:

The above story is based on materials provided by **University of Exeter**. *Note: Materials may be edited for content and length.*

1. Alexandra C. North, David J. Hodgson, Stephen J. Price, Amber G. F. Griffiths. **Anthropogenic and Ecological Drivers of Amphibian Disease (Ranavirosis)**. *PLOS ONE*, 2015; 10 (6): e0127037 DOI:10.1371/journal.pone.0127037

University of Exeter. "Frogs face virus risk in garden ponds." ScienceDaily. ScienceDaily, 3 June 2015. <www.sciencedaily.com/releases/2015/06/150603143602.htm>.

How rivers regulate global carbon cycle

May 13, 2015

Woods Hole Oceanographic Institution

River transport of carbon to the ocean is not on a scale that will solve our carbon dioxide problem, but we haven't known how much carbon the world's rivers routinely flush into the ocean, until now. Scientists calculated the first direct estimate of how much and in what form organic carbon is exported by rivers. The estimate will help modelers predict how this export may shift as Earth's climate changes.

Humans concerned about climate change are working to find ways of capturing excess carbon dioxide (CO₂) from the atmosphere and sequestering it in the Earth. But Nature has its own methods for the removal and long-term storage of carbon, including the world's river systems, which transport decaying organic material and eroded rock from land to the ocean.

While river transport of carbon to the ocean is not on a scale that will bail humans out of our CO₂ problem, we don't actually know how much carbon the world's rivers routinely flush into the ocean -- an important piece of the global carbon cycle.

But in a study published May 14 in the journal *Nature*, scientists from Woods Hole Oceanographic Institution (WHOI) calculated the first direct estimate of how much and in what form organic carbon is exported to the ocean by rivers. The estimate will help modelers predict how the carbon export from global rivers may shift as Earth's climate changes.

"The world's rivers act as Earth's circulatory system, flushing carbon from land to the ocean and helping reduce the amount that returns to the atmosphere in the form of heat-trapping carbon dioxide," said lead author and geochemist Valier Galy. "Some of that carbon--'new' carbon--is from decomposed plant and soil material that is washed into the river and then out to sea. But some of it comes from carbon that has long been stored in the environment in the form of rocks-- 'old' carbon--that have been eroded by weather and the force of the river."

The scientists, who included Bernhard Peucker-Ehrenbrink, and Timothy Eglinton (now at ETH Zürich), amassed data on sediments flowing out of 43 river systems all over the world, which cumulatively account for 20 percent of the total sediments discharged by rivers. The representative rivers also encompassed a broad range of climates, vegetation, geological conditions, and levels of disturbance by people.

From these river sediment flow measurements, the research team calculated amounts of particles of carbon-containing plant and rock debris that each river exported. They estimated that the world's rivers annually transport 200 megatons (200 million tons) of carbon to the ocean. The total equals about .02 percent of the total mass of carbon in the atmosphere. That may not seem like a lot, but over 1000 to 10,000 years, it continues to add up to significant amounts of carbon (20 and 200 percent) extracted from the atmosphere.

Generally, plants convert CO₂ from the atmosphere into organic carbon via photosynthesis. But most of this carbon eventually returns to the atmosphere when plant material (or animals that eat plants) decompose. A small fraction of this material, however, ends up in rivers. They carry it out to sea, where some

settles to the sea floor and is buried and disconnected from the atmosphere for millions of years and eventually makes its way back to the surface in the form of rocks.

At the same time, rivers also erode carbon-containing rocks into particles carried downstream. The process exposes carbon to air, oxidizing the previously locked-up carbon into carbon dioxide that can leak back out to the atmosphere. Until now, scientists had no way to distinguish how much of the carbon whisked away by rivers comes from either the biospheric or petrogenic (rock) sources. Without this information, scientists' ability to model or quantitatively predict carbon sequestration under different scenarios was limited.

To solve this dilemma, the scientists found a novel way to distinguish for the first time the sources of that carbon--either from eroded rocks or from decomposed plant and soil material. They analyzed the amounts of carbon-14, a radioactive isotope, in the river particles. Carbon-14 decays away within about 60,000 years, so it is present only in material that came from living things, and not rocks. Subtracting the portion of particles that did not contain carbon-14, the scientists calculated the percentage that was derived from the terrestrial biosphere: about 80 percent.

But even though biospheric carbon is the major source of carbon exported by rivers, the scientists also discovered that rivers surrounded by greater amounts of vegetation didn't necessarily transport more carbon to the ocean. Instead, the export was "primarily controlled by the capacity of rivers to mobilize and transport" particles. Erosion is the key factor--the more erosion occurs along the river, the more carbon it transfers to sea and sequesters from the air.

"The atmosphere is a small reservoir of carbon compared to rocks, soils, the biosphere, and the ocean," the scientists wrote in *Nature*. "As such, its size is sensitive to small imbalances in the exchange with and between these larger reservoirs."

The new study gives scientists a firmer handle on measuring the important, and heretofore elusive, role of global rivers in the planetary carbon cycle and enhances their ability to predict how riverine carbon export may shift as Earth's climate changes.

"This study will provide geochemical modelers with new insights on an important link between the global carbon and water cycles," says Don Rice, program director in the National Science Foundation's Division of Ocean Sciences, a major funder of the research.

Story Source:

The above story is based on materials provided by **Woods Hole Oceanographic Institution**. *Note: Materials may be edited for content and length.*

Journal Reference:

1. Valier Galy, Bernhard Peucker-Ehrenbrink, Timothy Eglinton. **Global carbon export from the terrestrial biosphere controlled by erosion.** *Nature*, 2015; 521 (7551): 204 DOI: 10.1038/nature14400

KSNH FALL CONFERENCE – MAMMOTH CAVE NATIONAL PARK

October 16 – 18, 2015 COMFORT INN – CAVE CITY

ALL TIMES ARE CENTRAL - ALL MEALS ARE ON YOUR OWN - ALL TRIPS LEAVE THE COMFORT INN UNLESS STATED OTHERWISE - NOTE DEPARTURE TIMES AND CARPOOL - TAKE CAMERAS, WATER, BINOCULARS, AND TICK SPRAY

Comfort Inn rooms have microwaves, fridges, coffee, Wi-Fi, and there is a heated pool.

Field Trip Ratings

Easy – hiking short distances usually on trails with little slope

Moderate – hiking at a comfortable pace on generally level terrain with no trails. Must be able to negotiate uneven surfaces and be able to step across occasional logs.

EARLY BIRD ACTIVITIES

Friday, Oct 16 Sand Cave Trail/Flint Ridge Road drive tour and Mammoth

12:30-4:30 Cave Visitors Center

Leader: Berl Meyer Rating - Easy

Sand Cave Info – Distance of 0.2 miles, located at Sand Cave trailhead/park entrance sign on Highway 225/east entrance road.

Sand Cave gained fame in 1925 when cave explorer Floyd Collins became trapped and later died despite a massive rescue effort. The tragedy also drew international attention to the Mammoth Cave region and the effort to establish a National Park here, which was successful in 1826. This very short trail is a good place for students to find a place to sit and reflect, perhaps write poetry or other observations about their trip.

After leaving Sand Cave, those interested will head north up Park Ridge Road then to Flint Ridge Road stopping by Mammoth Cave Church to visit Ole Floyd to make sure that his headstone has not been absconded.

Flint Ridge Road drive tour and Mammoth Cave Visitors Center Info – Distance of 0.3 mile loop plus 0.1 mile spur to Guide Cemetery, located next to Hotel; cross bridge from Visitor Center and turn right.

This paved trail offers views of the Green River Valley and the Historic Entrance. There are several interpretive signs along the way. In the center of the loop is the Old Guide's Cemetery, where Stephen Bishop, the famous African-American slave who guided at Mammoth Cave, is buried.

Friday, Oct. 16 Wildflower Hike on the Green River Bluffs Trail in Mammoth

1:30-4:30 Cave National Park

Leader: Randy Seymour Rating - Easy

MEET AT TRAILHEAD

Dinner on your own

Friday, Oct 16 Registration at Mammoth Cave Conference Center

6:30-7 pm 502 Mammoth Cave Road

Drive time approximately 5 minutes from Comfort Inn – Pat Meyer

Friday, Oct 16 Evening Program

7 pm Welcome and Introductions – Chris Bidwell

Agenda Explanations

Video: The Floyd Collins Story – Berl Meyer

Saturday, Oct. 17

Morning Trips

9:00-noon Trip to Seymour Roundstone Native Seed Farm in Hart County

Directions – North on I-65 or 31W to State Road 1140 (Raider Hollow Road)

Drive Time: 40 minutes

Leaders: Randy and John Seymour

Rating – Easy

Roundstone Native Seeds has expanded to encompass a collaborative enterprise or about 2,000 acres throughout the area, in which more than 40 farms participate. Seed of more than 200 native plants – including big bluestem and Indian grass, and wildflowers such as Maximilian sunflower, tickseed and starry rosinweed – is grown for wholesale and retail trade. It is cleaned, mixed, stored, and packaged on-site at the Seymour's' Riders Mill Farms, in a facility the KY Agricultural Development Board helped to fund. The company's expertise, gained bit by bit with hands-on work, has led to opportunities in growing and consulting with programs in KY and other states. The complexity of managing the collection – planting, harvesting, cleaning, storing and, marketing of so many types of native seeds – is highly specialized.

9:00-noon Hike Turnhole Bend Nature Trail and Sloan's Crossing Pond Trail

Leader:

Steve Kistler

Rating – Easy

Turnhole Bend Nature Trail

Distance: 1 mile to Green River Overlook and back

Trailhead on Highway 70, 0.4 miles west of intersection with Cedar Sink Road/Highway 422 (3.6 miles north of visitor center road)

This gentle trail leads past large sinkholes to an overlook of a bend in the Green River where Turnhole Spring emerges; the spring is often under water.

Sloan's Crossing Pond Trail

Distance: 0.4 mile and accessible

Located on Highway 70 just south of turn to visitor center

This boardwalk trail circles an historic stock/pond beaver pond which is slowly filling in, beginning the process of forest succession. Ponds like this are rare in a karst region, and the pond supports variety of life found in few other places in the park.

9:00-noon American Cave Museum and Hidden River Cave

Leader: group

Rating – easy to moderate

In the museum there are 2 floors of exhibits that explore the importance of groundwater protection; cave development and conservation; the people and culture of the cave region, and the cave animals. Museum store on site.

Admission to the Museum also includes the walking tour of Hidden River Cave, which takes the visitor 100 feet underneath the streets of downtown Horse Cave. Features of the tour include the river, the underground hydroelectric plant, and an 85-foot dome. There are over 200 steps going down into the cave.

Discount price for KSNH members - \$10.00

Lunch on your own

Saturday, Oct. 17

Afternoon Trips

1:00-5:00 pm **Waterfall Hike and Natural Arch Hike at the Headwaters of Honey Creek in Edmonson County**

NOTE TIME

Leader: Victor Fife Rating – easy to moderate

A beautiful little known waterfall and natural area to be visited.

12:30-4:30 pm **Beautiful Driving tour of Mammoth Cave Area including Joppa Ridge Road**

Leader: Steve Kistler Rating – easy

Frequent stops/discussions at points of interest – flora and nature sightings

Please carpool!

12:30-4:30 PM **Trip to Lone Star Preserve/Cave**

Leader: Dr. Bill Pearson Rating – easy

Drive time – 30 minutes

Participants should plan on bringing a sack lunch and flashlight.

Those leaving from the Seymour Farm can/will follow Margarette Perkins to the Preserve.

Those leaving from Comfort Inn in Cave City – Go **north** on I-65 to Bonnieville exit. Go **west** on 728 then **north** on 1391 (Wright Lane). Go about 1.5 miles and take **right** onto 1656. The Cave is 1 mile on the **right** marked with sign Lone Star Preserve.

Supper on your own

7 pm **Evening Program at Mammoth Cave Conference Center**

Welcome and Introductions – Chris Bidwell

Recap field trips

Speaker: Micah Perkins (KSNH Grant Recipient)

Dietary Resources Utilization among Water Snakes in Northwest Kentucky

Door Prizes – Cindy Payne

Board Meeting – ALL ARE INVITED!!!

Sunday, Oct. 18 **Cub Run Cave in Hart County**

10:00 am **Drive time: 40 minutes (28 miles) Rating – easy to moderate**

Directions – Exit I-65 at Munfordville. Go toward Munfordville on 31W. Turn onto Highway 88 West at the blinking light. Go 16 miles to Cub Run. Continue another 2 miles to Cub Run Cave Restaurant and Gift Shop.

Cub Run Cave, located in scenic Hart County, was first discovered in 1950. It was then briefly shown to the public before being closed for the next 55 years. The cave reopened to the public in July, 2006. New elevated wooden walkways and modern lighting were constructed for the public's safety and convenience. Come discover for yourself one of KY's newest and most beautifully decorated show caves!

Lunch at Cub Run Restaurant

Thanks for your attendance at this Fall Conference and support KSNH! Drive carefully.

Chris Bidwell, state president KSNH

AREA ATTRACTIONS:

Mammoth Cave Visitor Center and Chamber of Commerce booth – great area resources/hand-outs

See: KY Travel Guide 2015 and Oh Ranger 2015

Scenic drives at Mammoth Cave National Park

Bike trails – Park City to Visitor's Center

Hiking trails – list available – ask Chris

Cave tours throughout the region

Fishing – Green River and Nolin River

Camping at Mammoth Cave National Park and Jellystone Park Camp Resort

Canoe trips – Green River

Horseback riding – Jesse James Riding Stables

Dinosaur World

Kentucky Down Under

American Cave Museum/Hidden River Cave

Floyd Collins Museum

Mammoth Cave Wildlife Museum

Restaurants:

Mammoth Cave Hotel Restaurant – 758-2225

Cave City – Cream and Sugar Café

El Mazatlan Mexican Restaurant

El Patron Family Restaurant

Joe's Diner

Jolly's Smokehouse

Sahara Steakhouse

Watermill Restaurant

Familiar Food

Dairy Queen, Godfather's Pizza/O'Deli's, KFC, Cracker Barrel, Long John Silver's/A&W, McDonald's, Pizza Hut, Wendy's

Horse Cave – Mama Lou's BBQ

Sheila Kay's Café

Turtle Lin's Pizza and Pasta

Wigwam General Store

Familiar Food

McDonald's, Subway

Speakers and Trip Leaders

Chris Bidwell – state president KSNH – amateur naturalist and photographer – past president Falls of the Ohio chapter (2005-2013) – owl prowler – co-photographer with Susan Wilson for the book The Olmsted Parks of Louisville: A Botanical Field Guide (2014) – ER/Flight nurse (1974-2014) – seasonal guide Mammoth Cave National Park (2000-2001)

Victor Fife – naturalist, graphic artist, librarian – has been chasing waterfalls and natural arches for years – he has visited over 700 arches in KY

Steve Kistler – naturalist guide at Mammoth Cave National Park – retired Science teacher at Hart County High School – KY Ornithological Society president

Berl Meyer – vice president KSNH – long time member and board member KSNH – has led numerous geology and nature hikes, teacher naturalist, Navy veteran, Civil War buff – brings a lot of knowledge and history of the natural world to KSNH

Pat Meyer – state KSNH treasurer – conference registration – past president of state KSNH – naturalist, birder, teacher, excellent resource person – board member

Cindy Payne – KSNH member – Falls of the Ohio chapter treasurer – hospitality and door prize coordinator

Dr. Bill Pearson – (abbreviated from and extensive/impressive bio) – BS in Fish and Wildlife Management from Iowa State – MS and PhD in Fishery Biology from Utah State – Spalding University and University of Louisville professor of several ecology/biology/biospeleology courses – recipient of several grants including one for long-term monitoring protocols for Mammoth Cave National Park – numerous publications concerning Mammoth Cave National Park and Ohio River nature topics

Micah Perkins – University of Louisville Biology grad student (2016) – KSNH Grant recipient

John Seymour – conservationist, naturalist, manager of Roundstone Native Seed Farm – specialist in native grasses – KSNH Co-Naturalist of the Year 2014

Randy Seymour – conservationist, naturalist, proprietor of Rider's Mill Farm (a wildlife sanctuary in Hart County) – author of Wildflowers of Mammoth Cave National Park – KSNH Co-Naturalist of the Year 2014

Help with the removal of invasive plants

Financial and technical assistance for private landowners with property adjacent to or within 0.5 mile of public lands that have conservation and/or restoration values.

The goal of this program is to limit the spread of invasive plants species from private property to ecologically important public lands. The financial assistance is awarded through contracts between private landowners and University of Kentucky Forestry Extension which will pay for 100% of the estimated costs (up to \$10,000) of controlling invasive plants on eligible property. The invasive species control practices are expected to be completed between June 2015 and April 2016. Payments to program participants will be paid after verification of practice implementation.

Applicants must:

- Control or own eligible land.
- Have a written management plan for the property OR indicate a willingness to acquire one.
- Complete and submit the application as required to UK Forestry Extension.
- If approved, participants are required to sign a contract (including a W-9 form for payment), and agree to implement the planned invasive plant species control practices according to UK Forestry Extension standards and specifications as scheduled.

Questions?

Contact Christopher Reeves at 859-257-0174 or christopher.reeves@uky.edu

University of Kentucky
Department of Forestry
213 Thomas Poe Cooper Bldg.
Lexington, KY 40546

<http://www2.ca.uky.edu/forestryextension/ChristopherReeves.php>

JULY EVENTS

Pot Luck – July 16th

KSNH will be having its annual potluck on Thursday, July 16th. Gather at 6 PM to mingle and feast on the dishes of your fellow members

and the delicious BBQ offerings from Shack in the Back Barbecue.

It's always nice to know how many folks will be attending to plan better.

Please e-mail Wayne Kimbel at waykim1@twc.com confirm that you'll be there (and what you're bringing if you know that too).

Our main guest will be Marsha Meyer, Geologist, for our talk.

Marsha sits on the professional licensure board of Kentucky and will no doubt have something interesting to say to us.

Bonus Field Trip – July 18th

KSNH usually does not have an outing in July, but a special opportunity has been given to us to visit the Horner Nature Preserve in Crestwood, Ky.

This property is owned and managed by the University of Louisville and is restricted as to access.

Victoria Prescott, a Biology Phd candidate and past president of the Biology Graduate Student Association at U of L

has graciously offered to open the property up to us and serve as guide

to some very active Dragonfly habitat. We hope that members will take advantage of this chance to learn much more

about these creatures and visit a property that isn't readily accessible.

Victoria is passionate about her love of Dragonflies and expressed this in this recent quote...

"Protecting our natural ecosystems is very important to me, and urbanization has a great impact on the environment.

My research focuses on how urbanization affects dragonflies. Dragonflies are called "bioindicators", which means researchers

can gain a good understanding of how the ecosystem as whole is responding to urban land use by simply studying dragonflies.

I love studying dragonflies because they are so colorful and are easy to see. They have really cool names, too! I am so thankful that, through my research, I get to spend hours outside just watching dragonflies."



Come join her for this outing.



Kentucky Naturalist News

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FROM THE PRESIDENT Fall 2015

Hope everyone had a great summer. Our KSNH picnic in July was terrific – excellent food, speaker, and camaraderie. Just getting together for a meal with good conversations is something we need to further explore. Members could select a facility or restaurant and reserve seats for those who plan to attend. Our Fall Conference in the Mammoth Cave area is upon us. I have spoken or heard from all our speakers and they are ready, willing and excited to be part of our organization's outings. There are lots of trips/events to choose from and to meet the group's natural appetite. Please make every effort to attend the Fall Conference. Response as of September 2 has been poor and members only have until September 16 to get reduced rates at the hotel. Support your KSNH!

Lastly, I would again offer our sincere condolences to Larry Miller and his family. Please keep all our departed and ill members in our prayers. See you in Cave City!

Chris Bidwell



KSNH Welcomes New Members

Katie Schaefer
Terry Derting
Dave & Sue Vislisel
Kenny Karem
Rod Botkins Jr.
Byron Ryon (1 year's membership with attending 1st conference)

Editor:

After careful consideration I have decided to end my position as newsletter editor. It has been difficult to find content that would be interesting to members of Kentucky Society of Natural History. This newsletter will be my last one.

Please use the website for current information.

Dave Luzader



KSNH Officers & Board

Officers

President: Chris Bidwell (mach5049@gmail.com)

Vice President: Berl Meyer (kygeology@gmail.com)

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Hospitality: Cynthia Payne (cpayne_ksnh@yahoo.com)

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Nature Photography: Susan Wilson (susanfitrn@yahoo.com)

Youth Activities: Daniel Foster (daniel.foster@fairfield.k12.oh.us)

Board Members at Large

Berl Meyer (kygeology@gmail.com)

Pat Molloy

Affiliated Chapters

Falls of the Ohio (Louisville, Ky)

Meets every third Thursday of each month except Jan, Jul, Aug & Dec at the Louisville Nature Center 3745 Illinois Ave. Chapter President: Wayne Kimbel
Email: waykim1@twc.com

Arches of the Cumberland (Slade, Ky)

Meets informally, call President Dell Sasser for details, 606-666-7521 ext. 73559, or 606-233-8938.
Email: del.sasser@ktcs.edu

Fall Conference

The Wildflower Hike with Randy Seymour on Friday, October 16, from 1:30-4:30 has been cancelled.

We received the following from Dr. Charles Covell, one of our Naturalists of the Year award. Many of you may not know that he is a nationally known expert on butterflies and moths. He was a professor many years at the University of Louisville. He and Richard Henderson founded the Society of Kentucky Lepidopterists in 1974. Dr. Covell is one of our Lifetime members.

"Our annual Butterfly Count sponsored by the Society of Ky. Lepidopterists was held at Brownsboro, Oldham County where we have conducted the count most years since beginning in 1976. This year there were 35 people present, and we recorded 48 butterfly species and 1,495 individuals. The site is the former Bob Horner farm and the Horner Bird and Wildlife Sanctuary given to the U of Louisville Biology Dept. in 1961. This was the second largest species number we have ever had, the highest being 50 species. In all, over the years, we have recorded 70 butterfly species there."

Horse Cave, Ky

In the late 1800s, an underground stream here supplied hydroelectric power to the town above, making Horse Cave one of the first towns in Kentucky to have electric lights. Early in the 1900s, the cave entrance was used to create the world's first "air-conditioned" outdoor tennis courts.

By then, cave-related tourism had exploded in Kentucky, and Horse Cave became a battlefield in the so-called Cave Wars. During this tumultuous time, ingenious (and often unscrupulous) cave entrepreneurs employed every ploy imaginable to lure tourist dollars away from nearby **Mammoth Cave**, which was becoming increasingly famous and, at the time, was still privately owned.

The Cave War stories are fascinating, and you can learn about many of them by dropping in at **The Bookstore**, a Horse Cave institution where local historian Tom Chaney can usually be found talking history – or perhaps presiding over a meeting of the local "Liar's Club." And if you're in town on a Thursday night, drop by the **Historic Thomas House**, where musicians gather for a long-running acoustic jam session.



American Cave Museum

The walking tour (or Tom Chaney) will tell you that by mid-century, Hidden River Cave had been damaged by industrial and domestic pollution, a crisis that ultimately resulted in a great environmental clean-up project spearheaded by the American Cave Conservation Association, which has been headquartered in Horse Cave since 1987.

Today, Horse Cave is a true center for cave-related education, research and tourism. For a great introduction to the subject, visit the beautifully curated **American Cave Museum**, with vivid exhibits dealing with every aspect of caves, from preservation to groundwater to bats.

Or go beyond the exhibits in search of adventure!

Professional guides lead tours of the cavern that are geared toward visitors, no matter their fitness level. If you're ready for anything, consider the three- and five-hour "Wild Cave" tours, which will have you crawling, wading and squeezing your way through tight passages and underwater pools. And if the thought of taking a staircase or walking through a gate isn't exciting enough for you, keep in mind you can also rappel down to the Hidden Cave entrance – or ride the zip-line that runs high above the cool chamber below.

Beyond Horse Cave

Your time in Horse Cave is only the start of your adventure. Driving the back roads of Hart County is a pleasure in itself.

To put it in context, Horse Cave's population of just under 2,500 makes it the largest town in the county. That means there's plenty of rural countryside, with relatively quiet roads and rolling contours that are perfect for relaxing road trips – by car, motorcycle or bicycle. (And don't miss the **Hart County Barn Quilt Trail**, featuring more than 60 stops along these scenic roads!)

Hart County boasts five of the state's 10 largest springs, including 300 Springs and Gorin Mill Spring, the state's largest. Speaking of water, **Big Buffalo Crossing Canoe & Kayak** offers multiple options, including trips inside **Mammoth Cave National Park**. And in nearby Munfordville, you can browse exhibits at the **Hart County Historical Museum** or take a new cell phone tour highlighting the town's Civil War-era buildings and occupation.

From Horse Cave or Munfordville (home to the **Country Girl at Heart Farm Bed & Breakfast**, which offers a two-hour tour in which you can gather eggs and feed goats, ducks and horses) find your way to US 31E, a north-south route about 7-8 miles east of I-65. Follow it from tiny Hardyville down to Uno, where you'll find **Mama Lou's**, about as sweet a little barbecue joint as you could hope for. (Dig into some ribs, but don't neglect the pie!)

Keep south and you'll come to **Dennison's Roadside Market**, where you'll find all sorts of produce, crafts and hospitality. Then swing west back to Horse Cave and drop in at several great family attractions.

More to See & Do

Just seconds from the interstate, **Kentucky Down Under Adventure Zoo** mixes two different “down-under” adventures. Above ground it's a celebration of culture and wildlife from Kentucky, Australia and around the world, complete with kangaroos, emus and colorful lorikeets, one of the brightest exotic birds you'll ever see. Underground, it is home to **Mammoth Onyx Cave**, with frequent and very accessible cave tours.

Another option – and a grand choice for those who like to stroll off the beaten path – is to tour the northern and western reaches of Hart County.

From Bonnieville head west toward **Nolin Lake**, one of Kentucky's great fishing, boating and recreational destinations.

Then travel south to **Cub Run**, where **Detweiler's Country Store** will fix you up with Amish clothing, hats, baskets and a great old-fashioned sandwich on homemade bread. While you're in town here check out **Cub Run Cave**, where an elevated walkway makes for a delightful, accessible route through the beautiful cavern.

And if you keep going south, you can make your visit to Mammoth Cave National Park especially dramatic by crossing the **Green River** on either the **Green River Ferry** or the **Houchin Ferry**. (Call Mammoth Cave's Ferry Hot Line at 270-758-2166 to make sure water levels are suitable for crossing.)



Can't wait to get here? Start planning your getaway by calling 270-218-0386 or visiting www.kygetaway.com. Once in the area, plenty of brochures are available at the I-65/Mile Marker 60 rest stops (both north and south-bound) with staff on hand from 8:30 a.m. to 3:30 p.m. daily from March through December, and Friday-Sunday in January and February.

If You Go

Horse Cave/Hart County Tourist Commission
270-218-0386, www.kygetaway.com

Hidden River Cave/American Cave Museum
270-756-1466, www.hiddenrivercave.com

Horse Cave Stories Cell Phone Tour
270-854-3054, www.horsecavestories.com

Kentucky Down Under Adventure Zoo/Mammoth Onyx Cave
270-786-1010, www.kdu.com

Cub Run Cave
270-524-1444, www.cubruncave.net

Big Buffalo Crossing Canoe & Kayak
270-7524-7883, www.bigbuffalocrossing.com

Hart County Historical Museum
270-524-0101, www.hartcountymuseum.org

Match the Naturalist to the Quote/Statement

- A) Henry David Thoreau (1817-1862) He was born David Henry Thoreau but changed his name after attending college _____
- B) Rachel Carson (1907-1964) _____
- C) Wumen Hukai (1183-1260) _____
- D) Pliny the Elder (AD23-79) _____ - There is a Pliny the Younger, a nephew of Pliny the Elder
- E) Charles Darwin (1809-1882) _____
- F) Carl Linnaeus (1707-1778) _____
- G) Book of Ecclesiastics 3:1-8 or Turn, Turn, Turn (song by The Byrds 1965) _____
- H) John Muir (1849-1914) _____
- I) Aldo Leopold (1886-1948) _____
- J) John Burroughs (1837-1921) _____
- K) Author unknown – a Naturalist's code _____
- L) Hieronymus Bosch (1450-1516) _____
- M) Gifford Pinchot (1865-1946) _____
- N) Robert Frost (1874-1963) _____
- O) Ernst Haeckel (1834-1919) Full name is Ernst Heinrich Philipp Augustus Haeckel. _____
- P) Horace Sowers Kephart (1862-1931) _____
- Q) Alfred Russell Wallace (1823-1913) _____
- R) Andre (1746-1802) and Francois (1770-1855) Michaux _____
- S) Constantine S. Rafinesque (1783-1840) _____
- T) Sarah (Sadie) Frances Price (1849-1903) _____

- 1) "Nature is to be found in her entirety nowhere more than in her smallest creatures." Roman naturalist/writer Naturalis Historia, an encyclopedia of natural phenomena. Born Gaius Plinius Secundus. Early in life he was a Naval and Army commander in the Roman Empire.
- 2) Father of the conservation movement – "When we try to pick out anything by itself, we find it hitched to everything else in the universe." Scottish naturalist whose first love was Sierra Nevada which he dedicated his life to. Founder of the Sierra Club.
- 3) "Secrets lurk on all sides and there is news in every bush" "The best place to study nature is at one's home – on the farm, in the mountains, by the sea – no matter where that may be." American naturalist/essayist focused on the wonder and beauty of the "common" things in nature.
- 4) Coined the term "ecology" in 1866. From the Greek "oikos", meaning house/dwelling and Greek "ology" meaning study/science. Ecology: meaning the study of the household of nature.
- 5) Father and son French naturalists sent to America to study flora for medicinal, ornamental, and agricultural usages. An oak and saxifrage are named in the father's honor.
- 6) "The night is the winter, the morning and evening are the spring and fall, and the noon is the summer." American naturalist wrote Walden. His works on nature fill 20 volumes. Ralph Waldo Emerson was his mentor.
- 7) Amateur gifted botanist/artist/naturalist from Evansville, IN. Discovered several new species of plants in KY. A potato bean and an aster are named for her. She was a semi-invalid most of her life; she died suddenly and unexpectedly in Bowling Green.
- 8) "Ten thousand flowers in spring, the moon in autumn, a cold breeze in summer, snow in winter. If your mind isn't clouded by unnecessary things this is the best season of your life." Chinese poet/nature observer.
- 9) "To everything there is a season, and a time to every purpose under the heaven."
- 10) "The field has eyes, the wood has ears; I will look, be silent, and listen." Flemish artist whose works included detailed landscapes and nature imagery.
- 11) "The opportunity to see geese is more important than television, and the chance to find a pasque flower is as right and invaluable as free speech." American naturalist/conservationist. Founder of Wilderness Society 1935. Author of A Sand County Almanac. (If you want to know more about him, ask Dick Dennis!)
- 12) Cofounder of the Theory of Evolution by Natural Selection is often overshadowed by his senior partner, Charles Darwin. This cofounder facilitated his lack of fame/notoriety by naming his 1889 book of evolution Darwinism.
- 13) "How many apples fell on Newton's head before he took the hint? Nature is always hinting at us. It hints over and over again. And suddenly we take the hint." U.S. poet/naturalist wrote The Road Not Taken (1923). Recited at JFK's inauguration on January 20, 1961. His personal life was plagued with grief/loss – only 2 of his 6 children outlived him. He suffered from depression.
- 14) One of the first naturalists to alert people to the danger of pesticides – especially DDT. Stressed how all species are inter-connected. "One way to open your eyes is to ask yourself 'What if I had never seen this before? What if I knew I would never see it again?'" Wrote Silent Spring (1962) 2 years before her death from breast cancer.

15) Born in Turkey, this naturalist's life has been extremely written about. He studied flora and fauna in eastern U.S. from 1818 to 1826. Focused his studies in KY and was employed as a professor of botany at Transylvania University (1819-1825). Died in PA in 1840. Proposed more than 2700 new genera and 6900 new species in his lifetime. A viburnum and viola are a few discoveries names in his honor.

16) "You may loan your last dollar to a friend but never loan him your axe unless you are sure he knows how to use it." "The scrotum of a buck, tanned with the hair on, makes a good tobacco pouch." American naturalist/author/librarian. Spearheaded the formation of the Great Smoky Mountain National Park. At age 68 he died instantly in a car accident near Bryson City, NC, while returning home from visiting a bootlegger near Cherokee, NC.

17) Father of the U.S. Forest Service. Coined the term conservation. "Unless we practice conservation those who come after us will have to pay the full price of misery, degradation, and failure for the progress and prosperity of our day."

18) "Take nothing but pictures, leave nothing but footprints, kill nothing but time." "Take nothing but memories, leave nothing but footprints, shoot nothing but pictures, kill nothing but time."

19) Theory of evolution through natural selection and survival of the fittest originator. "It's not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change." English naturalist/geologist. (Berl would be proud!) Wrote Origin of the Species (1859) and Descent of Man (1871). Died of a heart attack. Buried in Westminster Abbey close to Isaac Newton.

20) Established binomial system to classify living things. Father of taxonomy. "There are some viviparous flies which bring forth 2000 young. These in a little time would fill the air, and like clouds, intercept the rays of the sun, unless they were devoured by birds, spiders, and many other animals." Swedish naturalist/biologist. Wrote System of Nature (1735). As a child when he became upset, his father would give him a flower which managed to calm him.

Chris and Mary Alice Bidwell

Answers is on the last page.

Answers: 1-d; 2-h; 3-j; 4-o; 5-r; 6-a; 7-t; 8-c; 9-g; 10-L; 11-l; 12-q; 13-n; 14-b; 15-s; 16-p; 17-m; 18-k; 19-e; 20-f.

Fall is a great time to get out and enjoy nature.

